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DISEASES CAUSED BY BACTERIA AND FUNGI

*Bendixen, H. C. (1943). Bekaempelse af Yverbetaendelse. **[Control of mastitis].**—*Medlemsbl. danske Dyrlaegeforen.* **26.** 31. [Abst. from abst. in *Norsk VetTidsskr.* **55.** 128. **1536**

Among general hygienic measures the need for wide standings for each cow is stressed, so as to avoid close confinement and the risk of teat and udder injury by neighbouring animals. Acriflavine infusions give good results in acute mastitis.—J. E.

Peterson, E. H., Whitmore, G., & Graham, R. (1944). **Studies in mastitis. Results of microscopic examination of 2,000 milk samples with and without additions of beef broth.**—*Vet. Ext. Quart. Univ. Pa.* No. 96. pp. 8–10. **1537**

2,000 parallel samples of milk were examined for streptococci, using (a) Bryan's enrichment method, and (b) Bryan's method with the addition of 0·2 ml. beef broth to each 5·0 ml. sample of milk. The beef broth favoured the growth of streptococci but the growth of contaminating organisms was also stimulated and interfered with the reading of results.—R. M. Arnold.

Hont, S., & Banks, A. W. (1944). **Streptococcal endocarditis in young pigs.**—*Aust. vet. J.* **20.** 206–210. **1538**

Two cases are reported, from the one piggery, of young pigs dying suddenly without previous symptoms being observed. P.M. examinations revealed large cauliflower-like growths on the left atrio-ventricular valves, which on histological examination showed typical verrucose endocarditis. Bacteriological examination in each case resulted in the recovery of streptococci from the heart valve lesions. Petechial haemorrhages were also observed under the capsule of the kidney and under the pleura and the spleen was enlarged and dark brown in colour.

The condition was reproduced in a young pig by the intravenous injection of increasing doses of young broth cultures grown from a lesion in a natural case.

—D. C. Blood (Australia).

Fellowes, O. N., & Routh, J. I. (1944). **A study of the chemical composition and antigenic properties of a polysaccharide fraction of three-hour cultures of** *Staphylococcus aureus.*—*J. Lab. clin. Med.* **29.** 1054–1061. **1539**

Dried, ground bacteria were extracted with formamide, and a polysaccharide was precipitated from the extract by addition of acetone. The material obtained in this way from two strains of organisms contained pentoses and glucosamine. The polysaccharides were antigenic and reacted not only with their own antisera but also with antisera prepared by the injection of whole organisms into rabbits. The specific polysaccharides were present in the culture media in which the bacteria had grown, as well as in the bacterial cells.—E. Boyland.

McFarlane, D., Garside, J. S., Watts, P. S., & Stamp, J. T. (1944). **An outbreak of bovine tuberculosis due to udder irrigation.**—*Vet. Rec.* **56.** 369–371. **1540**

An attested herd of 87 animals had been negative to the tuberculin test for five years. At one test 32 out of 33 milk cows, the only bull, three out of 17 yearling heifers, and 13 out of 14 calves reacted. The 22 heifers were negative.

About seven months previously 21 quarters of 16 dry cows had been irrigated twice for mastitis, with the same apparatus. Shortly afterwards progressive enlargement and induration developed in all irrigated quarters; this did not yield to further treatment. After calving, 10 of the cows were slaughtered before this investigation commenced, and no evidence of tuberculous mastitis was seen by the meat inspector. The milk of the infected cows was bulked, and fed to the calves. The remaining six cows all excreted tubercle bacilli in the milk, and cultural and biological tests showed them to be of the bovine type. The one cow which did not react to the tuberculin test, showed general emaciation and the most marked udder induration. A detailed P.M. examination revealed the udder to be the primary seat of infection in all cases, with infection of the regional lymph nodes. In five cases, there was evidence of infection by inhalation, in three cases the mesenteric lymph nodes were infected and in two cases there was miliary tuberculosis of the lungs in addition to the udder lesions. Two cows which had not been irrigated showed signs of inhalation infection, but no udder infection. In the irrigated cases, early infection of quarters that were not irrigated was observed.

The bull was housed with the milk cows. The yearling heifers had received bulked milk from the herd only before the irrigation. Only the three oldest had grazed with the herd after the infusion, and they reacted. All the calves were fed on bulked milk after the infusion. The heifers were housed separately and had not grazed with the herd after the irrigation, but they were served by the bull.

The authors suggest that one of the cows had an open tuberculous mastitis and that this had been spread by the teat-siphon, but that the infection might easily have been brought in from outside, if the apparatus was not sterilized. The danger of using unsterilized teat siphons is emphasized.—R. M. Loosmore.

Laporte, R. (1942). Forme ganglionnaire de la tuberculose atténuée du cobaye. **[Tuberculosis of the g. pig limited to the lymph nodes].**—*C. R. Soc. Biol. Paris.* **136.** 654–655. **1541**

An attenuated strain of *Mycobacterium tuberculosis* when injected subcutaneously into g. pigs in doses varying from 10–100 mg., produced transient hypertrophy of the liver and spleen and scattered granulomatous foci in the lungs. These lesions showed complete regression 5–6 months after inoculation.

On the other hand, a generalized lymphadenitis developed in which all the lymph nodes were much enlarged, without evidence of caseation or suppuration. The lymph node reaction persisted for more than 10 months. It is claimed that the syndrome in the g. pig resembled a similar hypertrophic condition of the human lymph node system described by Sabrezès.

—R. E. Glover.

*Møller, H. E. (1942). Angaaende Sikkerheden ved intracutane Tuberkulinprøver. **[The reliability of the intracutaneous tuberculin test].**—*Medlemsbl. danske Dyrlaegeforen.* p. 442. [Abst. from abst. in *Skand. VetTidskr.* **33.** 484 and 498–499]. **1542**

The records of 14 tuberculin tests on cattle are tabulated. An initial test with bovine tuberculin was followed immediately and two months later by simultaneous comparative tests with bovine and avian tuberculin. Unexplained differences at the initial and second test occurred and no diagnosis was possible until the final test which indicated avian type infection in some of the animals.—J. E.

Nègre, L., & Bretey, J. (1941). Sur l'apparition précoce de l'allergie et de la résistance antituberculeuse chez les animaux vaccinés par le BCG au moyen de scarifications cutanées. **[Rapid appearance of allergy and resistance to TB. in animals vaccinated by skin scarification with BCG].**—*Ann. Inst. Pasteur.* **66.** 26–31. **1543**

The authors tried to find out how soon animals vaccinated by cutaneous scarification against TB. developed sensitivity and what resistance they acquired. G. pigs vaccinated thus six times with one drop of a suspension of BCG containing 5 mg. micro-organisms per ml. were tested at different intervals after vaccination by the intradermal injection of 0·1 ml. crude tuberculin diluted 1 : 20. All reactions were negative for three days. From the 4th–5th day, 10% began to be sensitive to tuberculin, from the 7th–8th, 50%, from the 12th–19th, 90%, and at the end of the month almost all were sensitive.

In a study of the resistance acquired to TB., g. pigs were vaccinated as before and then tested by the subcutaneous inoculation of 0·001 mg. of a strain of virulent human tubercle bacilli. Resistance began to be shown by the 9th day and by the 19th had reached a degree comparable to that observed 30–45 days after vaccination by multiple subcutaneous injections.

The authors found that cutaneous scarifications made with a vaccinostyle were as efficient as injections made with a needle and recommend this method as being particularly suitable for the immunization of children with BCG.—S. M. G.

*Cima, V. (1942). Fattori specifici ed aspecifici di crescita del micobatterio tubercolare. **[Specific and non-specific factors required for the growth of** *Mycobacterium tuberculosis***].**—*Boll. Ist. sieroter. Milano.* **21.** 365–367. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 65–66]. **1544**

Alcohol or acetone extracts of *Mycobact. tuberculosis*, added to Sauton's synthetic medium or glycerin gelatin, cause a diminution in the growth of this organism. The addition to these media of carbohydrates extracted from the bacilli, favours the growth of cultures. Non-specific carbohydrates have no influence. The protein fraction of the bacilli, subjected to the action of trypsin, equally favours the growth. Cultures of the organism grow more rapidly if the hydrolysate is added to the medium. This growth factor resists a temperature of 133·9°C. and passes a Berkefeld No. 12 candle.—R. M. Loosmore.

Johnson, E. P., & Pratt, A. D. (1944). **Johne's disease and johnin reactions.**—*Amer. J. vet. Res.* **5.** 117–124. **1545**

This is a study of the use of johnin in a herd which included reactors to the johnin test, but no clinical cases of Johne's disease. Records were kept of feeding, breeding, viability of calves, milk production, fluctuations in the reaction to johnin and autopsy findings in a group of reactors.

Although no animal developed clinical Johne's disease, six died or were killed. Three of these had lesions suggestive of Johne's disease and in two of them acid-fast bacilli were found. Two others had skin nodules containing acid-fast organisms suggestive of *Mycobacterium johnei*. Repeated johnin tests on these two elicited a degree of reaction closely parallel with the increase in size and the number of the nodules present.

Two splenectomized hamsters fed with cultures of *Mycobact. johnei* reacted to the johnin test, but no other evidence of disease could be found. Cats given cultures or morbid material orally also reacted to the test and in two cases intestinal lesions suggestive of Johne's disease were found.—I. W. Brocklehurst.

Lafon, J. (1942). Etude de la dispersion du bacille de la fléole dans l'organisme de la souris. **[The dispersion of the timothy grass bacillus (***Mycobacterium phlei***) in the body of the mouse].**—*Ann. Inst. Pasteur.* **68.** 274–276. **1546**

Mice six weeks to two months old were injected subcutaneously with 1 mg. of a 4–6 days old culture of *Mycobacterium phlei*, and killed at intervals varying from eight hours to 56 days after inoculation. Measured amounts of spleen, kidney, and regional lymph node were inoculated on solid egg medium and incubated for 4–6 days at 37·5°C.; the number of colonies obtained (mean of four tubes) was taken as a measure of the degree of infection of each organ. After the initial dispersion of the first few hours in all three organs, cultivable organisms disappeared from the spleen and kidney, but could be recovered from the regional lymph node until the 13th–30th day. The intracranial injection of 0·1 mg. *Mycobact. phlei* culture in another similar group of mice led to widespread, heavy and more lasting dispersion, large numbers of colonies being obtained from spleen and kidney until the 13th day and from brain until the 26th day. The intracranial injection of 0·1 mg. culture 45 days after the subcutaneous inoculation of 1 mg. culture gave the same picture as intracranial inoculation alone and L. concludes that if any immunity to *Mycobact. phlei* exists, it disappears when the bacilli of the primary infection are eliminated.

—Alex B. Paterson.

Velu, H., Pigoury, L., & Courtade, R. (1942). Comportement du bacille morveux desséché sous le vide après congélation. **[Characters of** *Pfeifferella mallei* **frozen and dried** *in vacuo***].**—*C. R. Soc. Biol. Paris.* **136.** 775–776. **1547**

Virulent cultures of *Pf. mallei* were frozen, evacuated with a Cenco-Hyvae pump, and dried, then sealed in glass ampoules. These were kept at 1°–4°C. After 21, 24 & 25 months, only about one in three gave a growth in glycerin broth. The initial growth was slow, no growth being apparent for 4–7 days, and the final growth was small. After several subcultures, growth appeared in 24–48 hours. Initial growth did not

occur on gelatin. In cultures 21 months old and more, morphological changes were noted, the organisms being in very long tortuous filaments, and having a granular appearance. Intraperitoneal injection of both freshly regained cultures and of frequently subcultured growths had no effect on g. pigs which, when injected later with a virulent culture, developed Strauss' reaction, showing that no immunity had been developed.

No culture over 28 months old could be regained. [Experiments by URBAIN, THIERY & COURTANTE—*V. B.* **13.** 155, show that virulence for the g. pig is retained up to eight months.]—R. M. LOOSMORE.

WADDINGTON, F. G. (1944). **Pasteurellosis in poultry and wild birds in Tanganyika Territory.**—*Vet. J.* **100.** 187–191. **1548**

W. describes a few cases of fowl cholera in fowls on the poultry farm at Mpapwa. The disease had never before been diagnosed on this farm and the origin of the outbreak was obscure. A dead pasteurella vaccine was used but no claims are advanced for its efficacy. A probable case of pasteurellosis in wild eagles is also described and the possible relation of infection in wild birds to infection in domestic poultry is discussed.—J. D. BLAXLAND.

DE MENDONÇA MACHADO, A., & PELOURO, J. T. (1943). Pseudo tuberculose dos roedores. [**Pseudotuberculosis of rabbits in Portugal**].—*Repos. Lab. Pat. vet., Lisboa.* **5.** 175–182. [English, French and German summaries]. **1549**

During a period of 18 months, 1,840 rabbits were examined, 45 of which were affected with *Past. pseudotuberculosis* infection. Four cases of the disease were seen in g. pigs.

The authors describe the organism, and the anatomical and histopathological lesions encountered in natural and experimental cases of the disease in rabbits. —ISOBEL W. BROCKLEHURST.

BELL, I. R. (1944). **A case of tularaemia of unusual origin.**—*Canad. med. Ass. J.* **50.** 555–556. **1550**

A case of tularaemia in a male packing-plant worker is described. It is thought that the infection was acquired through a small injury on a finger, sustained a few days before the onset of symptoms, while engaged in an operation called "pulling tongues" on pigs.

The following possibilities are raised: (1) that the pig's mouth became contaminated by the eating of some infected animal such as a rabbit, (2) that the pig had been drinking from an infected water supply, (3) that the tularaemia organism is capable of living in a pig's mouth without necessarily infecting the pig, and (4) that the pig had local lesions in the mouth or a generalized infection.—THOS. MOORE (CANADA).

PARKER, R. R. (1945). **Tularemia: spontaneous occurrence in the chipmunk.**—*Publ. Hlth Rep., Wash.* **60.** 17. **1551**

The existence of tularaemia in a chipmunk, *Eutamias* sp., is recorded for the first time. The affected animal was captured alive in Northern Idaho. —D. D. OGILVIE.

DE OLIVEIRA, J. J. A. (1943). Alguns casos de contaminação do leite pelo "Bacillus prodigiosus". [*Chromobacterium prodigiosum* **in milk samples**].—*Repos. Lab. Pat. vet., Lisboa.* **5.** 301–304. [English, French and German summaries]. **1552**

Chr. prodigiosum was cultivated from five out of 1,574 milk samples submitted for the diagnosis of mastitis. The organism grew on blood agar at 37°C., but the characteristic red pigment formed only after the plates were removed from the incubator and kept at room temperature for some time.—I. W. B.

PIENING, C. (1943). Die pathologisch-anatomischen und histologischen Veränderungen der Gallenblasen von Enteritis-Gärtnerkeime ausscheidenden Rindern. [**The pathological anatomy and histology of lesions of the gall-bladder in cattle excreting** *Salmonella enteritidis*].—*Berl. Münch. tierärztl. Wschr.*/*Wien. tierärztl. Mschr. Dec.* 24th. 442–443. **1553**

The macroscopic and microscopic appearances of the gall-bladder were studied in 30 bovines which had excreted *Salmonella enteritidis* for at least 42 days prior to slaughter, and which gave positive cultures from the gall-bladder after death. Thickening of the wall of the gall-bladder, often with the presence of gall-stones, or a diphtheritic or catarrhal inflammation of the mucosa was demonstrable in most specimens. From his findings, P. suggests that *S. enteritidis* can cause specific changes (*e.g.* focal cell proliferation, vascular changes) in the gall-bladder wall as in the liver, but that these lesions may resolve completely, unless gall-stones or some other irritant factor (bile stasis, parasites, other bacterial infection) leads to a supervening non-specific inflammation, which may in turn heal and leave a thick-walled organ. *S. enteritidis* by itself would not lead to such damage of the gall bladder.—E. COTCHIN.

MORRIS, J. F., BRIM, A., & SELLERS, T. F. (1944). **Salmonella types isolated in Georgia in 1941-1943, including a new type—Salmonella georgia.**—*Amer. J. publ. Hlth.* **34.** 1277–1279. [Authors' summary copied *verbatim*]. **1554**

During the 3 year period, 1941–1943, 20 types of *Salmonella* organisms were isolated from blood and stool specimens. Of 130 isolations, *S. paratyphi B*, *S. typhimurium*, and *S. choleraesuis* accounted for 53·8 per cent. *S. paratyphi B* and *S. choleraesuis* were found in 59 per cent of the 44 positive blood cultures.

A new type, isolated from the stool of a normal food handler, has the antigenic formula VI, VII: b-e n,z_{15}, and has been designated as *S. georgia*.

LINN, R. H., LEASK, W. H., GUNDERSON, M. F., & SLACK, J. M. (1944). **Comparison of crystal violet antigen, thiosulphate antigen, and the tube method in testing pullorum serums.**—*Amer. J. vet. Res.* **5.** 158–163. **1555**

Crystal violet stained antigen has been used for several years in the U.S.A. in the rapid whole-blood agglutination test for the detection of pullorum "carriers". Recently, a new antigen has been advocated, which is also stained with crystal violet, but in which glycerin and sodium thiosulphate are added to the medium on which the organisms are grown. This paper describes an attempt to correlate the reactions of the two antigens for use in whole-blood tests with the results in the tube method, using hyperimmune chicken and rabbit serum. Antigens were all prepared from the same eight strains and the immune sera were obtained by inoculating rabbits and chickens with unstained heat-killed suspensions of these antigens.

The thiosulphate antigen was less sensitive than the crystal violet antigen, though not sufficiently so to eliminate cross-reaction errors. There is also evidence to support the authors' opinion that "sandy" or "doubtful" reactions sometimes seen in the field are the result of a low concentration of pullorum agglutinins in the blood and probably indicate an old quiescent infection or a very recent one.—J. D. BLAXLAND.

LAWSON, J. R. (1943). **Bovine contagious abortion.** —*J. Fmrs' Club.* pp. 77–90. **1556**

A general discussion on control.

DE MENDONÇA MACHADO, A. (1943). Dados àcêrca da expansão da brucelose dos animais em Portugal. **[Increasing incidence of brucellosis in Portugal].**—*Repos. Lab. Pat. vet., Lisboa.* **5.** 165–173. [English, French and German summaries]. **1557**

This article deals with the incidence of brucellosis in cattle, swine, sheep and goats, as revealed by the agglutination test on serum and whey. The incidence in cattle is much lower than in Great Britain, but a high percentage of swine is infected. Among the factors which are responsible for the increase in bovine brucellosis, the author mentions the use of live *Brucella abortus* vaccine.

A small percentage of sheep and goats is infected with brucellosis, and the incidence in these animals can be correlated with the occurrence of Malta fever in man.

Biological examinations of 63 samples of goat and ewe cheese showed that two contained living and virulent brucella organisms.—ISOBEL W. BROCKLEHURST.

SHANKS, P. L. (1945). **Suspected entero-toxaemia in cattle.**—*Vet. Rec.* **57.** 47–48. **1558**

12 cows, one bull, one bull calf and one yearling heifer became affected with a condition commencing with evidence of gastric disorder, going on to diarrhoea or dysentery. Four of the cows calved prematurely. Three died after showing very high temperatures; two cows and one of the premature calves were slaughtered. The remainder recovered after varying intervals. The bull recovered after the injection of 50 ml. of *Clostridium welchii* Type D antitoxic serum.

P.M. examination revealed inflammation and haemorrhage in parts of the large intestine, and in two cases, haemorrhages in the epicardium. The stomach and small intestine were normal.

The disease was first confined to dry cows not in the milking herd, but later spread to the milking cows, the bull, and the yearling heifer, which were not in contact. Nothing could be found to incriminate the food or water. Filtrates of the large intestine contents killed mice in a dose of 1 ml. given intravenously. Mice were protected by *Cl. welchii* Type D antitoxin against a lethal dose of the intestinal filtrate but not by Type C nor, surprisingly, by Type B antitoxin. Filtrates of stomach and small intestine contents were not toxic to mice.

Confirmation of the presence of *Cl. welchii* Type D toxin was not obtained from the Wellcome Laboratories. It is still doubtful, therefore, whether this outbreak can be attributed to enterotoxaemia due to *Cl. welchii* Type D.—R. M. LOOSMORE.

PELOURO, J. T. (1943). Um caso de actinomicose ocular em bovino. **[Ocular actinomycosis in a cow].**—*Repos. Lab. Pat. vet., Lisboa.* **5.** 235–239. [English, French and German summaries]. **1559**

The lesion took the form of a gross hemispherical mass, with a rough surface, protruding from the right orbital cavity, the eye itself being completely replaced by granulation tissue. Sections, appropriately stained, revealed the features of an infective granuloma, with the typical actinomycotic colonies.—I. W. B.

FERRAZ, C. C. (1943). Ensaio àcêrca da acção exercida, "in vitro", pelos "fermentos lácticos" L.C.P.V., no desenvolviento de algumas espécies microbianas patogénicas. **[Effect of "lactic ferments" on the growth of certain pathogenic bacteria].**—*Repos. Lab. Pat. vet., Lisboa.* **5.** 315–321. [English, French and German summaries]. **1560**

The product prepared by the Central Laboratory of Veterinary Pathology, Ministry of Agriculture, Portugal, and called "lactic ferments" consists of a 24-hour culture of a strain of *Lactobacillus bulgaricus* and of a yeast, in a peptone-milk medium. It is used therapeutically to treat intestinal intoxications. It was found to have no action *in vitro* on the growth of *Pseudomonas pyocyanea*, *Bacterium coli* or *Salmonella typhi-murium*. Staphylococci, *Bacillus anthracis* and *S. gallinarum* were inhibited, and *Pasteurella septica*, *Erysipelothrix rhusiopathiae*, *Brucella abortus* and *S. abortus-equi* failed to grow in its presence.—I. W. B.

See also absts. **1689** (mastitis), **1631**, **1690**, **1691** (streptococci), **1683**, **1693**, **1726** (staphylococci), **1694** (botryomycosis), **1695** (TB.), **1723** (cultivation of leprosy bacillus), **1750** (anthrax), **1716** (duck pasteurellosis), **1752** (salmonella), **1748** (brucellosis), **1601-1603** (tetanus), **1750** (bovine contagious pleuro-pneumonia), **1721**, **1722**, **1727** (culture media), **1684-1687**, **1715** (bactericidal agents).

DISEASES CAUSED BY PROTOZOAN PARASITES

DE LUCENA, D. T. (1941). Lista dos protozoários hemoparasitas de aves da região neotrópica. **[A list of protozoa found in the bloodstream of birds in subtropical Brazil].**—*Rev. Fac. Med. vet. S. Paulo.* **2.** No. 1. 33–66. **1561**

Lists are given showing the species of birds in which protozoa have been recorded with the protozoan species found in them, and also of the recorded protozoa with the birds in which they occur. The protozoa encountered include species of *Haemoproteus*, *Leucocytozoon*, *Plasmodium*, *Toxoplasma*, *Haemogregarina*, and *Trypanosoma*. The only species of domestic bird concerned is the domestic fowl, from which a species of toxoplasm is recorded.—U. F. RICHARDSON.

*GEURDEN, L., & VANDEPLASCHE, M. (1942). **[Control of trichomoniasis in cattle].**—*Vlaam. Diergeneesk. Tijdschr.* p. 113. [Abst. from abst. in *Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 75. **1562**

In cows the infection appears to terminate spontaneously. Infected bulls are treated by filling the preputial sac with 1% trypaflavine ointment. It is essential that coitus should not occur for at least three months.—C. HORTON SMITH.

MAIER, J., & COGGESHALL, L. T. (1944). **The duration of immunity to *Plasmodium knowlesi* malaria in *rhesus* monkeys.**—*J. exp. Med.* **79.** 401–430. **1563**

There is little accurate information available as to whether or not immunity to malaria exists after the destruction of all the parasites within the host, or as to the duration of such immunity. These deficiencies in knowledge exist because drugs like quinine and atebrin do not completely sterilize the infection. There is good evidence that sulphanilamide produces complete sterilization of *P. knowlesi* infection in rhesus monkeys. Sodium sulphathiazole was used in the present work, as it is known to have the same effect as sulphanilamide and its much greater solubility allows greater ease and accuracy of administration. Rhesus monkeys experimentally infected with *P. knowlesi* were treated with sodium sulphathiazole to sterilize the infection and after varying intervals were reinoculated intraperitoneally with homologous strains of the plasmodium. One monkey was given sulphathiazole on the second day of acute infection and another received it on the fourth day, but no immunity had been established at the time of reinoculation three and ten weeks later. In monkeys which survived acute infection with the aid of quinine

or immune serum and in which a naturally acquired immunity had developed and the infection had become a chronic one, a partial immunity lasted about a year after sterilization of the infection with sulphathiazole. The end-point at which immunity disappeared seemed to be independent of the length of the chronic infection. —C. HORTON SMITH.

See also absts. **1612**, **1750** (trypanosomiasis), **1696** (avian coccidiosis), **1697**, **1698** (spirochaetes), **1724** (bovine trichomoniasis), **1725**, **1734** (staining protozoa), **1752** (bovine theileriasis).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

MÖHLMANN, H., & STÖHR, P. (1943). Eine Schnellmethode zum Nachweis von Maul- und Klauenseuchevirus. **[A rapid method for the diagnosis of foot and mouth disease]**.—*Arch. wiss. prakt. Tierheilk.* **78.** 352–354. **1564**

This is a description of a test for the presence of F. & M. disease virus by the intradermal inoculation of the bovine tongue. In a susceptible animal a positive result can be obtained in 24 hours. If no reaction has occurred after two days the animal is tested for susceptibility by inoculation of the tongue with a virulent suspension. If this second inoculation produces the disease then the first test was negative, whereas if the animal resists the second inoculation it is proved to be immune and the original test must be repeated using another animal. A titration of a virus suspension can be combined with the infectivity test by the simultaneous inoculation of the tongue with four dilutions choosing sites as far apart as possible for each dilution. This test has been developed for studying the rate of inactivation of virus during the preparation of vaccine. The cattle used in these tests are from 2–3 years old, from disease-free districts and not previously vaccinated against F. & M. disease.—W. M. HENDERSON.

*GLENSBJERG, B. O. (1942). "Vaccinationsknuder". **[Vaccination nodules in foot and mouth disease]**.—*Medlemsbl. danske Dyrlaegeforen.* p. 703. [Abst. from abst. in *Skand. VetTidskr.* **33.** 485 and 506]. **1565**

Nodules in the subcutis or musculature sometimes appear after vaccination against F. & M. disease. They are said to be enlarged lymph nodes and should be removed at meat inspection. It is advised that the vaccine be injected under the skin and no deeper, so that any such nodules may be superficial and easily observed.—J. E.

*TUNÇMAN, Z. M., & SCHÜKRÜ-AKSEL, I. (1938). Etude clinique, histologique et expérimentale de la maladie d'Aujeszky (pseudo-rage) en Turquie. **[Aujeszky's disease in Turkey]**.—*Anal. Inst. Victor Babes, Bucarest.* **9.** 218–233. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 28]. **1566**

This is a description of clinical and P.M. details of cases of Aujeszky's disease in animals. The occurrence of pruritus is recorded in man following contamination of the skin with infective material. The disease has been recognized in Turkey since 1937. —W. M. HENDERSON.

*LEWTHWAITE, R., & SAVOOR, S. R. (1938). **Rabies in British Malaya. Its extent and its control.**—*Anal. Inst. Victor Babes, Bucarest.* **9.** 130–134. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 26]. **1567**

The dog is the only animal responsible for the spread of rabies in Malaya. Since 1930, 30,000 dogs have been vaccinated by the method of Umeno and Doi, a single injection of 6 ml. of a 20% emulsion of phenolized buffalo brain being given. Semple's phenolized vaccine is used for human treatment; 960 treatments have been given since 1928.—W. M. H.

FERRAZ, C. C. (1943). Algumas notas estatísticas do serviço da raiva nos anos de 1940, 1941 e 1942. **[Work on rabies in the Central Laboratory for Veterinary Pathology, Portugal, in 1940-42]**.—*Repos. Lab. Pat. vet., Lisboa.* **5.** 323–336. [English, French and German summaries]. **1568**

The records of rabies vaccine production are divided into three parts. The first part deals with the numbers of rabbits inoculated, the dates of inoculation, the incubation period (usually six days), and the numbers of inoculation accidents and intercurrent infections. These figures give information on the relation between the virus and the animal host. The second part deals with the production of the vaccine. Records are kept of the number of animals approved for use, and the average weight of nervous tissue collected from each.

The third part deals with distribution, and records the number of doses of vaccine despatched to each district named, in each of the years 1940–42 inclusive. —ISOBEL W. BROCKLEHURST.

*JONNESCO, D. (1938). Recherches sur le virus fixe-lapin de l'Institut Babes. **[Rabies research at the Babes Institute]**.—*Anal. Inst. Victor Babes, Bucarest.* **9.** 78–85. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 18]. **1569**

The fixed virus of the Victor Babes Institute, Bucarest, was isolated from a wolf in 1894 and by 1938 had had 3,145 laboratory passages without loss of immunizing value. There has been a tendency, however, especially during the last ten years, for a shortening of the incubation period. Death now occurs in five days instead of in seven as originally.—W. M. H.

*CRACIUN, E. C., & JONNESCO, D. (1938). Le problème de la décentralisation du traitement antirabique. **[Decentralization of rabies inoculation in Rumania]**.—*Anal. Inst. Victor Babes, Bucarest.* **9.** 47–62. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 24]. **1570**

Sufficient experience has been gained in the use of phenolized rabies vaccines to justify decentralization of treatment, provided that care and rigorous control are maintained.—W. M. HENDERSON.

*GHODSSI, M. (1938). Législation sanitaire de l'Iran pour la prophylaxie de la rage. **[Rabies prophylaxis in Persia]**.—*Anal. Inst. Victor Babes, Bucarest.* **9.** 76–78. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 25]. **1571**

In the province of Teheran, since 1937, dogs are vaccinated once a year with a phenolized vaccine, and Fermi's phenolized vaccine is used for treatment. Four deaths have occurred out of 235 treated cases. —W. M. HENDERSON.

*BOECKER, E. (1938). Über einige zweckmässige Ergänzungen der statistischen Berichte über die Wutschutzbehandlung. **[Statistical reports on rabies control]**.—*Anal. Inst. Victor Babes, Bucarest.* **9.** 6–11. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 23]. **1572**

A plea for the recording of accurate and comprehensive statistics indicating the degrees of risk incurred; such a method has been adopted satisfactorily at the Pasteur Institute, Kasauli, India.—W. M. HENDERSON.

*Lépine, P., & Sautter, V. (1938). La méthode rapide de diagnostic histologique de la rage. [**Rapid method for the diagnosis of rabies**].—*Anal. Inst. Victor Babes, Bucarest.* **9.** 123–130. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 15]. **1573**

Rapid fixation of brain tissue treated with equal parts of acetone made acid with acetic acid and a saturated solution of $HgCl_2$ in absolute alcohol, followed by embedding in paràffin and staining by the fuchsin, safranin blue method enabled microscopic examination to be made within four hours of the removal of the brain. Normality of the axons of the hippocampus and the basal ganglion is believed to be sufficient evidence of the absence of rabies infection. Treatment is advised as a precautionary measure if any lesions of meningitis, infiltration, or neuronophagia are found even though Negri bodies are absent.—W. M. Henderson.

Collier. (1943). Tollwut bei einer Ziege. [**Rabies in a goat**].—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* Nov. 26th. 411. **1574**

A report of a fatal case of dumb rabies in a goat which had been bitten on the muzzle by a stray dog. The incubation period was 14 days and death occurred after an illness of six days. The diagnosis was confirmed by histological examination.—W. M. Henderson.

*Jonnesco, D. (1938). Infection rabique mortelle autostérilisable chez un chien, avec immunité naturelle. [**Auto-sterilization in fatal rabies in a dog**].—*Anal. Inst. Victor Babes, Bucarest.* **9.** 85–89. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 19]. **1575**

A dog given a fixed virus strain intracerebrally developed clinical symptoms of rabies but recovered. After reinoculation some months later, clinical symptoms were again produced and the animal died. Although typical lesions were found, including Negri bodies, the virus could not be recovered by animal inoculation. In an attempt to explain this phenomenon, J. examined the serum of 121 dogs, but found no evidence of viricidal or neutralizing properties.—W. M. Henderson.

*Schwentker, F. F. (1938). **The etiology of encephalomyelitis following antirabies vaccination.**—*Anal. Inst. Vector Babes, Bucarest.* **9.** 202–205. [Abst. from abst. in *Bull. Inst. Pasteur.* **42.** 27]. **1576**

On the theory that the nerve axons of rabbits tolerating vaccinia virus may contain a specific cerebral antigen, S. suggests that a similar phenomenon may be associated with neuroparalytic accidents occurring after antirabies treatment. The risk of such accidents might then be eliminated if vaccines could be prepared from cultured virus instead of nervous tissue.—W. M. H.

Ferraz, C. C. (1943). Acêrca da acção do ricinoleiato de sódio no vírus rábico fixo. [**Action of sodium ricinoleate on fixed rabies virus**].—*Repos. Lab. Pat. vet., Lisboa.* **5.** 305–313. [English, French and German summaries]. **1577**

The author was unable to confirm the destructive action of sodium ricinoleate on fixed rabies virus, when used in a 1% solution on virus emulsified in physiological saline.—Isobel W. Brocklehurst.

Bennett, S. C. J., Horgan, E. S., & Mansur, A. H. (1944). **The pox diseases of sheep and goats.**—*J. comp. Path.* **54.** 131–160. **1578**

The occurrence of sheep pox in the Sudan is recorded. This disease has probably existed for many years but has escaped attention owing to its low incidence and slow rate of spread. Experimental work is described with the viruses of vaccinia, sheep pox, goat pox, and contagious pustular dermatitis. Details of technique are stressed, the main points being the use of material gathered in the papular or vesicular stage, with treatment with ether to eliminate pyogenic bacteria, the use of the intradermal route for artificial transmission of sheep pox, the scarification of large areas of the skin for inoculation of the other three viruses, the lapse of as short an interval as possible in cross-immunity tests, and the use of isolation premises for work with each virus.

The following claims made by other workers could not be confirmed :– (1) that vaccinia virus will protect against sheep pox ; (2) that vaccinia virus can be transmuted by passage through sheep to a mild form of sheep pox, and (3) that sheep pox virus can be attenuated by passage through goats. Sheep pox virus could not be transmitted to rabbits, grivet monkeys, calves, or goats. The production of immunity by " clavelization " could not be generally recommended, as sheep that had developed only local lesions subsequently died when exposed to unfavourable conditions.

Goat pox and contagious pustular dermatitis [C.P.D.] are believed to be absent from the Sudan. A Palestinian strain of the former and a British strain of the latter virus were studied. Both strains were transmitted to goats, calves, rabbits, and grivet monkeys ; scarification of the shaved skin of the rabbit with fresh goat material of the C.P.D. strain produced papular lesions in three days. No relationship was found to exist between vaccinia, sheep pox, and the goat pox viruses, whereas a close relationship was observed between the goat pox and the C.P.D. strains. Goats recovered from goat pox were found to be completely resistant to scarification with either goat pox or C.P.D. virus, but goats recovered from C.P.D. were fully susceptible to goat pox although still resistant to C.P.D. A difference in the character of the lesions produced experimentally by the two viruses could be detected in the goat, the rabbit, and the monkey. In spite of the close immunological relationship between these two strains the authors believe that they are distinct entities and until evidence is produced to the contrary they consider that the Palestinian virus should be recognized as goat pox.

[A claim is made that the virus of C.P.D. was readily transmitted to the rabbit ; this is contrary to the finding of most workers. Selbie (*V. B.* **15.** 187), in claiming to have established a strain in rabbits reports an incubation period of 6–20 days. No record is given of any investigation of the properties of any infective agent recovered from the rabbit lesions.]—W. M. H.

Farmer, T. W., & Streeter, G. A. (1944). **The diagnosis of influenza virus infections by the agglutination-inhibition test.**—*Johns Hopk. Hosp. Bull.* **75.** 48–59. **1579**

Seventy-six pairs of sera from patients suffering from a variety of infectious diseases were subjected to the Hirst chick-cell agglutinin-inhibition test : in none was a fourfold or greater rise in titre demonstrated against either influenza A or B. [Similar results were obtained by Stuart Harris—*V. B.* **13.** 424.]

During an influenza epidemic in December 1943, 10 out of 14 pairs of sera tested showed a fourfold or greater increase against influenza A but none against influenza B. The use of the test in routine diagnosis is discussed.—R. E. Glover.

Hollaender, A., & Oliphant, J. W. (1944). **The inactivating effect of monochromatic ultraviolet radiation on influenza virus.**—*J. Bact.* **48.** 447–454. **1580**

Allantoic fluid infected with influenza A virus was exposed to monochromatic radiation using wave lengths varying from 2,180–2,937Å. Loss in infectivity was determined by the intranasal inoculation of mice with ten-fold dilutions of treated and untreated virus. It

was found that the virus was highly sensitive to a wave length of 2650Å but that sensitivity decreased at shorter and longer wave lengths. In this respect influenza A virus behaves like vaccine virus and bacteriophage.
—R. E. Glover.

Palmeiro, J. M. (1943). Encéfalo-mielite nos animais domésticos. **[Encephalomyelitis in domestic animals and birds in Portugal].**—*Repos. Lab. Pat. vet., Lisboa.* **5.** 183–204. [English, French and German summaries]. **1581**

Encephalomyelitides occur in horses, cattle, sheep, swine, cats and the domestic fowl in Portugal. Viruses were isolated from cases of disease in all these species. All the viruses from the mammalian species proved pathogenic for the pigeon, g. pig and rabbit. The avian virus proved pathogenic for the pigeon, but not for the g. pig or rabbit.

The equine virus was not identified, since the necessary type strains were not available, but was probably that of Borna disease. The ovine disease, from the description, might be louping-ill.

An encephalomyelitis of the dog was recognized, but the author was unable to isolate a virus from cases of the disease.

Attempts to demonstrate transmission of equine encephalomyelitis by arthropod vectors were unsuccessful. the arthropods used were ixodids, muscids, tabanids, mosquitoes and triatomid bugs.—I. W. B.

Koprowski, H., & Lennette, E. H. (1944). **Pathogenesis of Venezuelan equine encephalomyelitis virus infections in the developing chick embryo.**—*J. Bact.* **48.** 463–472. **1582**

The authors used mouse brain, infected with the Venezuelan strain of E.E., to initiate growth of the virus in eggs by inoculating the chorio-allantoic membrane. The virus was carried through 58 generations : no indication of change in pathogenicity for mice was noted.

The rate of growth of the virus was determined by harvesting and titrating embryos between 1 and 27 hours after inoculation of a 10^{-8} dilution of virus. Infectivity was first demonstrated at the 10th hour and the virus content increased rapidly up to 22 hours when the peak was reached. After this stage death of the embryos was liable to occur. Once the virus was established on the chorio-allantoic membrane it spread rapidly through the egg and infected the allantoic fluid, amniotic fluid (low concentration), embryo and yolk sac. The virus was also transmitted serially by direct inoculation of the yolk sac.

Results of simultaneous titrations in mice and chick embryos showed that both species were equally susceptible to the virus.—R. E. Glover.

I. Kubes, V. (1943). Relaciones inmunológicas entre el virus encéfalomielítico equino de Colombia y el de Venezuela. **[Immunological relations between the viruses of equine encephalomyelitis of Colombia and of Venezuela].**—*Puerto Rico J. publ. Hlth.* **18.** 391–401. In English pp. 402–411. [Spanish version reprinted in *Rev. Med. vet., Bogotá.* **12.** 108–116, and in *Bol. Inst. Invest. vet., Caracas.* **1.** No. 5. 155–168. (1943)]. **1583**

II. Kubes, V. (1943). Virus encefalomielitico equino, tipo Venezuela, en Trinidad. **[Venezuelan-type equine encephalomyelitis virus in Trinidad].**—*Bol. Inst. Invest. vet., Caracas.* **1.** No. 5. pp. 169–176. [See also *V. B.* **15.** 10]. **1584**

I. Mouse-protection tests showed that the Venezuelan strain of E.E. virus is immunologically identical with the Colombian strain. Nevertheless, the immunizing power of the Venezuelan strain is superior to that of the Colombian strain. This greater antigenicity may be a natural characteristic or it may be a property acquired in the laboratory.

II. An outbreak of E.E. affecting a total of 47 animals occurred in Trinidad in 1943. Examination of brain tissue from two fatal cases, a horse and a mule, revealed the presence of a neurotropic virus, which was apparently identical with the Venezuelan type of E.E. virus.—Isobel W. Brocklehurst.

Fortner, J. (1943). Diskussionsbemerkungen zum Thema "Ansteckende Blutarmut der Einhufer". **[Equine infectious anaemia].**—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* Nov. 26th. 410–411. **1585**

F. does not agree with Eberbeck's theory [*V. B.* **13.** 167.] that because anaemia sometimes complicates cases of equine infectious bronchitis, this condition is related to equine infectious anaemia. Recording the experimental transmission of equine infectious anaemia by blood-sucking insects, F. issues a warning against the danger of transmitting the disease by the use of contaminated inoculation needles.—W. M. Henderson.

—. (1943). **Rinderpest and goat virus.**—*Trop. Agriculturist.* **99.** 65–68. **1586**

In a discussion of the use of goat virus for the immunization of cattle in Ceylon, where rinderpest has broken out after being absent since 1933, it is pointed out that if the goat virus strain is contagious to cattle the results of its use may be serious.

When rinderpest existed in Ceylon the disease rarely affected goats, and goats were imported from India for 10 years without rinderpest's being reintroduced ; recently, however, rinderpest infection in imported goats has become relatively common, and it is believed that the recent outbreak started with goats imported from India.

It is suggested that the use of goat virus on a large scale in India has resulted in the production of a strain of rinderpest which is contagious to goats and transmissible to highly susceptible cattle ; although at first this produces a mild type of disease in cattle virulence is regained on passage through these animals.—U. F. R.

Levaditi, C. (1942). Association entre ultravirus. Louping - ill et lymphogranulomatose inguinale. **[Association between the louping-ill and lymphogranuloma inguinale viruses].**—*C. R. Soc. Biol. Paris.* **136.** 656–657. **1587**

Mice were inoculated intracerebrally with a mixture of louping-ill and lymphogranuloma inguinale viruses. In the first passage, the neural lesions which characterize and differentiate the two viruses, indicated that both viruses were fully active. Serial passage, however, resulted in a gradual diminution in lymphogranuloma virus. By the fourth passage (the end-point in the series) all the mice were affected with louping-ill but only a small proportion showed lesions of lymphogranuloma.—R. E. Glover.

Cole, C. G. (1944). **Experiments with crystal-violet vaccine for the prevention of hog cholera.**—*Iowa Vet.* **15.** 16–20. [Reprinted in *Vet. J.* **100.** 168–170]. **1588**

This is a general review of the laboratory and field experiments conducted by the U.S. Bureau of Animal Industry, with a summary of the work of Doyle and Matthews in Great Britain [see *V. B.* **12.** 535, and **13.** 320].—W. M. Henderson.

Hoffmann, F. (1943). Über die Hundestaupe unter besonderer Berücksichtigung ihres Erregers. **[Dog distemper].**—*Dtsch. tierärztl. Wschr./Tierärztl.Rdsch.* **51/49.** 244–247. **1589**

In tests of 3,098 dogs it was found that susceptibility to intraperitoneal injection of distemper virus was 74% in animals 4–6 months old and decreased with age, the figure in dogs 6–10 years old being 3%.—J. B. Brooksby.

Macchiavello, A., & Coutinho, A. B. (1942). Adeno-mieloenterosis de los gatos y epizootias felinas del nordeste del Brasil. I. Clinica y transmisión experimental de la enfermedad. [**Adeno-myelo-enterosis of cats, and feline epizootics in northeastern Brazil. I. Clinical and experimental transmission of the disease**].—*Arch. Hig., Rio de J.* **12.** No. 3. 15–60. **1590**

A disease is described, which in the last 3–5 years has destroyed practically the whole cat population of north-eastern Brazil. The disease is of short duration, 1–5 days, 90% of the cases ending in death. Symptoms are gastro-intestinal (vomiting of bile and blood, diarrhoea containing blood and shreds of mucous membrane) together with respiratory catarrh (coryza, conjunctivitis, pulmonary congestion).

Lesions found P.M. in uncomplicated cases were ulceration of the colon, hypertrophy of the mesenteric lymph nodes, congestion and destruction of the mucosa of the ileum, destruction of the bone marrow and lymphoid tissue and congestion of the lungs. Intranuclear acidophile bodies were present in the lesions in the mucosa of the ileum and in the blood- and lymph-forming organs.

Sterile filtrates of viscera, blood and exudates transmitted the disease to other cats in all cases. The disease produced in this way differed from the naturally occurring disease in that, if secondary complications were avoided, the cat died within 10 days of inoculation from an affection of the haemopoietic organs. If secondary invasion occurred death followed more rapidly, as in the natural disease, from non-specific septicaemia.

The authors postulate that the virus is not the cause of death in most cases, but that owing to the intense leucopenia, non-specific secondary organisms invade the blood by way of the destroyed epithelium of the intestine and lung, the animal dying of septicaemia. The final site of lesions is dictated by the affinity of the organisms involved for one or other organ or tissue.

On the basis of these findings, it is assumed that the virus disease is similar to that described by Lawrence *et al.* [*V. B.* **11.** 366] in the U.S.A., and that the natural disease is similar to that described in France by Urbain [*V. B.* **6.** 422], in England by Hindle, by Findlay, and by Dalling, and in the U.S.A. by Leasure *et al.*

The authors propose that the disease be named adeno-myelo-enterosis, as that specifies the organs attacked. The use of such names as feline distemper, gastro-enteritis, or influenza is to be deprecated. Much detail is given in 13 tables concerning observations made, particularly regarding haematology and passage experiments.—R. M. Loosmore.

Traub, E. (1943). Aktive Immunisierung mit Hühnerembryo-Impfstoffen gegen die zur Zeit in Deutschland auftretende atypische Geflügelpest. [**Use of chick embryo vaccine against atypical fowl plague in Germany**].—*Zbl. Bakt. I.* (*Orig.*). **150.** 1–16. **1591**

The disease dealt with in this paper may be identical with Newcastle disease, cross-immunity experiments having been impossible owing to the war [see also *V. B.* **13.** 90]. Details are given of the preparation of a vaccine by treatment of a 20% suspension of infected chick embryo with 0·5% formalin for six days in the cold. Only a suspension having a titre of 10^{-7} or higher is satisfactory as a source of vaccine. The yolk sac may with advantage be included in the suspension, as it increases the volume of vaccine which can be produced. Two intramuscular doses of 1 ml. protected fowls against a subsequent inoculation of 1–10 million minimum infective doses of virus. Immunity is produced 7–9 days after one dose of vaccine, and lasts for at least one month. The vaccine will retain its immunizing properties after storage in the cold for 84 days.

Attempts to immunize against classical fowl plague with a homologous vaccine prepared in the same way were unsuccessful.

Aluminium hydroxide adsorbate vaccine in which the virus was inactivated by formalin as before, had the advantage that a single injection was as effective in the production of immunity as the double injection of the ordinary vaccine.—J. B. Brooksby.

Matzke, M. (1942). Die Diagnose der Hühnerpest. [**The diagnosis of fowl plague**].—*Z. InfektKr. Haustiere.* **59.** 42–53. **1592**

This article reviews the various aspects of the disease which have to be studied in the diagnosis of fowl plague. It is emphasized that no characteristic lesions are to be found on P.M. examination and that the diagnosis depends on the correlation of the epidemiological and clinical pictures and P.M. findings.—J. B. B.

Pop, A., Muntiu, N., & Turburi, A. (1943). Untersuchungen über eine bösartige Kükenseuche : " Morbus Filaret ". 1. Mitteilung. [**A virus disease of chickens : " morbus Filaret ". I**].—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 247–250. **1593**

The authors first encountered this disease among fowls in the Filaret district of Bucarest in the summer of 1942. Unlike both classical and atypical fowl plague, the disease is limited to fowls from 1–4 months old. The causal virus is found in the blood, internal organs and intestinal contents of the affected birds. It passes through a Chamberland L3 filter and survives for 90 days at 6°C. in a medium containing glycerin. Under experimental conditions, chicken 1–4 months old are uniformly susceptible, while pigeons and sparrows are in some cases resistant. The incubation period is 1–2 days in experimentally infected birds. Death follows 2–3 days after the appearance of symptoms. Clinically, an acute and a rarer sub-acute form can be recognized. In the sub-acute form, various nervous symptoms are superimposed on the predominantly " septicaemic " picture of the acute form. The mortality is 98–100%.

The pathological findings are summarized as an ulcerative, necrotic and haemorrhagic enteroproventriculitis. The respiratory tract is not involved to an extent greater than slight oedema of the lungs.

Fowls hyperimmunized against the Filaret virus are as susceptible as are normal fowls to infection with classical fowl plague.—J. B. Brooksby.

Andrewes, C. H. (1944). **Virus diseases of man : a review of recent progress.**—*Brit. med. Bull.* **2.** 265–269. **1594**

This article provides the student of virus diseases with a useful summary of modern conceptions. The subject is considered under the following headings—new biological techniques, erythrocyte agglutination by viruses, interference phenomenon, classification, physical and chemical studies of viruses, chemotherapy, transmission and epidemiology, and vaccines.

—R. E. Glover.

Meiklejohn, G., Beck, M. D., & Eaton, M. D. (1944). **Atypical pneumonia caused by psittacosis-like viruses.**—*J. clin. Invest.* **23.** 167–175. **1595**

Clinical and experimental data are given on 10 cases of primary atypical pneumonia in man from which psittacosis-like viruses were isolated. In four severe cases (two fatal), contact with pigeons was admitted and

a pigeon ornithosis virus was recovered. The remaining six were infections contracted by nurses or laboratory personnel in which there was no history of association with birds. It is highly probable that infection was acquired either through contact with patients suffering from a psittacosis infection or through handling laboratory animals.

The strains varied in their virulence for mice. Two were lethal by intraperitoneal inoculation, while four failed to infect by this route. All six killed mice by intracerebral injection.

The authors are inclined to recognize three types within this group, *viz*, psittacosis, pigeon ornithosis and pseudopsittacosis. They claim that these can be differentiated by complement-fixation tests.

It is pointed out that the number of cases of primary atypical pneumonia from which a mouse-pathogenic agent can be isolated, is relatively small.—R. E. Glover.

Dammin, G. J., & Weller, T. H. (1945). **Attempts to transmit primary atypical pneumonia and other respiratory tract infections to the mongoose. Commission on acute respiratory diseases.**—*J. Immunol.* **50.** 107–114. [Authors' summary copied *verbatim*]. **1596**

An attempt has been made to isolate in the mongoose the causative agent of primary atypical pneumonia. Throat-washings from 7 patients, sputa from 6 patients and lungs from 2 fatal cases were employed and were inoculated intranasally and intratracheally. For the intratracheal inoculations, most of the specimens were suspended in 5 per cent gastric mucin. A total of 265 mongooses was used in these experiments. No gross or microscopical evidence of the presence of a transmissible agent in the mongoose-lung was obtained.

Additional experiments have been carried out to determine the susceptibility of the mongoose to influenza-viruses A and B, meningopneumonitic virus, the cotton-rat agent isolated from a case of primary atypical pneumonia by Eaton *et al.*, and the mongoose-agent isolated from a case of acute pneumonitis by Weir and Horsfall. Pulmonary lesions were obtained only with the meningopneumonitic virus.

Plotz, H., Reagan, R. L., & Wertman, K. (1944). **Differentiation between fièvre boutonneuse and Rocky Mountain spotted fever by means of complement fixation.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 173–176. **1597**

There is a cross-immunity in g. pigs between Rocky Mountain spotted fever and boutonneuse fever, but spotted fever vaccine does not immunize against boutonneuse fever. Complement-fixation tests carried out with antigen made from cultured rickettsia showed specific differences of titre in reactions with sera from either convalescent g. pigs or human beings, but if the saline-soluble antigens from cultures are used no specific difference can be detected.—U. F. Richardson.

Blanc, G., Martin, L. A., & Baltazard, M. (1944). Etude du comportement des virus exanthematiques chez divers ectoparasites. I.—Comportement du virus du typhus murin chez le pou de l'ane *Haematoinus asini*. [**Behaviour of the viruses of exanthematic typhus in different ectoparasites. I. Behaviour of the virus of murine typhus in the donkey louse** *H. asini*].—*Arch. Inst. Pasteur Maroc.* **2.** 578–585. **1598**

Donkeys are susceptible to murine typhus and show a febrile reaction when inoculated with infective blood. *Haematopinus asini* feeding on reacting donkeys becomes infective to g. pigs or man about ten days after the inoculation of the donkeys, at a time when the febrile reaction has subsided. The lice contain the virus for about ten days, and the faeces of such lice are also infective.—U. F. Richardson.

Blanc, G., & Baltazard, M. (1944). Transmission et conservation naturelles des typhus. Immunité. Epidemiologie. Prophylaxie. [**Natural transmission and conservation of typhus rickettsia. Immunity, epidemiology, prophylaxis**].—*Arch. Inst. Pasteur Maroc.* **2.** 674–715. **1599**

It is argued that the infective agents in typhus are lice faeces in which the virus can survive for long periods, and that infection in man is due to the inhalation of powdered faeces. It is claimed that dried lice faeces are the reservoir of the virus, and not murine infections, the virus of which is a separate entity. Immunity in typhus is considered to be absolute, and although the virus may survive some time in the internal organs, relapses do not occur. Brill's disease in America is ascribed to infection from clothing contaminated with lice faeces, and not from carrier immigrants from Europe. It is suggested that in early typhus the virus circulates in the blood, but with the invasion of the endothelial cells an antibody is produced. Upon recovery the virus disappears from the body as the endothelial cells develop immunity. The mobile endothelial cells have probably only a short life, and antibody may disappear from the blood allowing symptomless reinfections, but the sessile endothelial cells persist for a long time, thus preserving clinical immunity until they are replaced with new non-immune cells.

Doubt is expressed as to whether *Rickettsia canis*, *R. ovina* and *R. bovis* are true rickettsia, and it is suggested that lymphogranuloma, psittacosis, trachoma, *R. conjunctivae* infection and even trench fever should be excluded from the rickettsial infections until further information is available as to the nature of their causal agents.—U. F. Richardson.

Mazé, P. (1942). Action de l'intestin humain sur les bactériophages des ferments lactiques normaux du lait. [**Action of the human intestine on the bacteriophages of normal lactic ferments of milk**].—*C. R. Soc. Biol. Paris.* **136.** 655–656. **1600**

Bacteriophages attacking the normal lactic ferments of milk do not appear to occur in normal human faeces. When given experimentally *per os* they appear in the faeces in 24–48 hours; they disappear within a few days when administration is stopped. It is concluded that the intestine is an unfavourable site for action of the bacteriophage on the lactic acid bacillus.—J. B. B.

See also absts. **1578** (contagious pustular dermatitis), **1623-1625** (virus tumours), **1698-1700** (chemotherapy of virus diseases), **1741**, **1747** (swine fever), **1729** (rickettsia), **1750** (rinderpest, African swine fever, horse sickness), **1752** (rickettsial diseases of pigs in Algeria, rabies control).

IMMUNITY

Sá Viana Conte, H. (1943). A anatoxina tetânica na vacinação de animais e hiperimunização de produtores de sôro. I memória. [**Immunization and hyperimmunization of serum producers, with tetanus anatoxin. I**].—*Repos. Lab. Pat. vet., Lisboa.* **5.** 117–132. [English, French and German summaries]. **1601**

Sá Viana Conte, H., & Garcia, J. d'A. R. (1943). A anatoxina tetânica na vacinação de animais e hiperimunização de produtores de sôro. II memória. [**Immunization and hyperimmunization of serum producers, with tetanus anatoxin. II**].—*Ibid.* 133–158. [English, French and German summaries]. **1602**

I. In the preparation of potent tetanus toxin it was found that the reaction of the medium should be pH 5·8 to 6·0, and that the cultures should be incubated for 12 days, then left at room temperature for 15 days before filtration. Twenty-one days should be allowed for the formalin to convert the toxin into toxoid. Horses were immunized with toxoid prepared in this way, the process taking about 130 days. The animals were bled 15 days after the last injection ; 15 days later they were given one injection of toxoid and tapioca to reinforce the immunity. The serum had a value of less than 300 I.U.

II. The authors describe attempts to improve the preparation of tetanus toxin and toxoid. Various media were tried out, and peptone media were found to be best for toxin production. Immunization and hyper-immunization were carried out on the accepted lines, with larger doses of anatoxin than usual. The authors note that antitoxin production varies with the individual, and that it is impossible to forecast the exact time when maximum antitoxin content will be reached.—I. W. B.

SÁ VIANA CONTE, H., & COELHO, F. F. (1943). Possuem reactividade adquirida os filhos de éguas vacinadas contra o tétano, durante a gestação ? **[The antitoxin titres of foals of mares immunized against tetanus].**—*Repos. Lab. Pat. vet., Lisboa.* **5.** 159–164. [English, French and German summaries]. **1603**

The offspring of mares vaccinated against tetanus during pregnancy, possess no acquired immunity to the disease. The degree of immunity to tetanus is exactly the same in the foals of immunized mares as in those of unvaccinated mares.—I. W. BROCKLEHURST.

MENKIN, V. (1944). **Production and implications of an antiserum to necrosin.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 217–218. **1604**

In a previous paper [*V. B.* **13.** 329] M. showed that a factor termed necrosin and associated with the euglobulin fraction of inflammatory exudates is responsible for the pattern of injury in acute inflammation. An antiserum to necrosin might be of value in controlling the toxic or injurious effects of inflammatory processes. Such an antiserum has been prepared in rabbits, which have been immunized to varying doses of necrosin prepared from canine exudates. After six subcutaneous injections at six-day intervals, serum from the rabbits gave a definite precipitin reaction with a 1 : 100,000 dilution of necrosin.—J. B. BROOKSBY.

JAGGARD, G., CRISMAN, D. W., & CAMPBELL, H. C. (1944). **Oral treatment of food allergies.**—*Vet. Ext. Quart. Univ. Pa.* No. 95. pp. 3–7. **1605**

The usual method of treating food allergies by repeated hypodermic injections over a prolonged period is not generally applicable in veterinary practice. Oral treatment by using gradually increasing quantities of the food itself is also not entirely suitable because of the long period required and the risk involved with hypersensitive subjects. Specific food digests (prepared by reaction of the food with hydrochloric acid, pepsin and trypsin and named propeptan) can, however, be used and give satisfactory results. In human beings treatment occupies approximately three weeks and comprises feeding on a beef diet for 2–3 days followed by three days on the same diet plus 2–3 0·1 gr. propeptan capsules 45 min. before each meal. In addition a small amount of the food to which the subject is allergic is given. After a further three days the amount of the allergenic food is doubled and then redoubled in the next three days. The propeptan is omitted a week after full amounts of the food are tolerated.

—D. D. OGILVIE.

MADINAVEITIA, J., & STACEY, M. (1944). **Substrates for hyaluronidase.**—*Biochem. J.* **38.** 413–417. **1606**

The hyaluronidase or " diffusing factor ", extracted from bovine testicles, was incubated with hyaluronic acid (from umbilical cords) and other polysaccharides while measurements of viscosity were made.

The viscosity of the hyaluronic acid and of extracts of bovine nasal septa, of placenta and of an ovarian tumour, decreased during incubation owing to the hydrolytic action of the hyaluronidase. A number of other naturally occurring polysaccharides including an extract of cartilage from bovine trachea, gastric mucin, ovomucoid, heparin and a few polysaccharides from moulds and bacteria were not attacked by hyaluronidase.—E. BOYLAND.

GRIFFITTS, J. J. (1944). **Laboratory method of determining the potency of typhoid vaccine.**—*Publ. Hlth Rep., Wash.* **59.** 1515–1528. [Author's summary copied *verbatim*]. **1607**

The ability of typhoid vaccine to immunize mice against typhoid bacilli may be measured quantitatively. A suggested procedure for measuring the potency of typhoid vaccine, in which factors influencing the results of tests are thought to be minimized, follows :

Each of 30 or more mice of any susceptible strain, 6–8 weeks old and weighing 14–16 gms., is given 0·5 cc. of a 1 : 10 dilution of the vaccine intraperitoneally. Equal numbers of male and female mice should be used in each group. Fourteen days after the injection of vaccine the mice are divided into 3 groups of not less than 10 mice each, one group to receive approximately 100,000, one group approximately 10,000, and the third group approximately 1,000 lethal doses of virulent typhoid bacilli (16–20 hours old) suspended in 5 percent mucin.

At the time of the challenge, not less than 30 mice (set aside at the time of injecting mice with vaccine) of the same strain, age, weight, and equally distributed as to sex, are divided into 3 groups of not less than 10 mice each. These groups are given doses of typhoid organisms suspended in mucin so that in one group the majority of mice die, in another the majority survive. These mice serve to determine the lethal dose which shall be the greatest dilution which kills 50 percent or more of mice tested. Four plate colony counts are made to determine the number of organisms present, and in this fashion the virulence of the test organism is checked. The virulence of a test strain should be such that not over 100 organisms suspended in mucin are required to kill 50 percent of mice. All challenged mice should be observed for 72 hours.

The requirement that 0·05 cc. of vaccine protects at least 50 percent of mice against not less than 10,000 lethal doses should be established.

See also absts. **1539** (staphylococcal polysaccharide antigen), **1542** (tuberculin test), **1543** (BCG vaccination), **1545** (johnin), **1563** (immunity to monkey malaria), **1564** (allergic test for foot and mouth disease), **1567-1572**, **1576** (rabies immunization), **1579** (chick-cell agglutinin inhibition in influenza), **1586** (rinderpest immunization), **1591** (atypical fowl plague immunization), **1597** (complement fixation in rickettsial diseases), **1619** (acquired tumour immunity), **1671** (necrosin and pyrexin).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

BRUCE, W. G. (1944). **Screwworm survey of the Southeastern States in 1943.**—*J. econ. Ent.* **37.** 687–689. **1608**

A survey of the southeastern states of the U.S.A. in 1943 revealed widespread infestations with *Cochliomyia americana* in Florida, Georgia and Indiana, reach-

ing outbreak proportions with considerable loss of livestock in peninsular Florida and southern Georgia.

Climatic conditions favourable to the fly, together with shortages of experienced farm labour and effective remedies, contributed to the rapid increase and spread of the pest.

As a result of the survey, the proper distribution and conservation of remedies, together with instruction of the stockmen, greatly reduced the severity of the outbreak.—W. MOORE.

I. FLÜCKIGER, G. (1944). Über die Bekämpfung der Dasselplage in der Schweiz. **[Warble fly control in Switzerland]**.—*Schweiz. Arch. Tierheilk.* **86.** 91–98. **1609**

II. HOFFMANN, J. A. (1944). Bekämpfung der Dasselschäden in der Schweiz. **[Warble control in Switzerland]**.—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* April 14th. 131. **1610**

I. From 1921–43, warble fly control in Switzerland had been organized on a voluntary basis by the Swiss Hide Damage Commission, an official body upon which were represented various agricultural interests, the tanners, the butchers, and the Federal Government. Under this system the control of warble fly met with some success, since the percentage of skins showing evidence of warble fly damage decreased from 12·6 in 1936 to 7·62% in 1941. The incidence has, however, increased during the war, due to depletion of the agricultural population by conscription. In 1943 a meeting of representatives of the interests concerned recommended the introduction of compulsory control, and this was done by an Order of the Federal Council of February 11th, 1944. Any warbles present must be destroyed before cattle are driven up to the owner's or a strange pasture and during the time they are on the pasture the owner of the grazing is responsible for the destruction of any further larvae which develop. From January 1st, 1945, cattle must not be brought to a public market or livestock show or to a public gathering of cattle unless they have been previously treated to exterminate the warble fly. 25% of the cost of the campaign is borne by the State, 25% by the Canton, and 50% by the commercial interests concerned.

Under the Order, the Federal Political-Economy Department has published a decree embodying the following points. The destruction of warble fly larvae can be carried out only when the larvae are under the skin and so the earliest possible time is January. The owner may select which of the recommended treatments is used, and supervision is carried out by special officials appointed by the Canton. The Canton supplies the farmer with the drugs at a reduced price or entirely free.

For chemical treatment, three Swiss proprietary compounds are recommended, *viz*, "antassin", "tikizid", and "hypocotin", the first two being derris preparations and the last a nicotine compound. "Antassin" and "tikizid" are applied as watery solutions or suspensions to the backs and lumbar regions of the cattle. When the larvae have already bored through the skin of the back the use of "hypocotin" is recommended. Mature larvae may be removed mechanically.

II. A similar article to I.—T. E. GIBSON.

EICHLER, W. (1941). Ueber die Artzugehörigkeit der Dasselfliegenlarven aus dem Schlund und aus dem Wirbelkanal. (Untersuchungen über Hypodermiden. V.) **[Research on hypodermids. V. The species of warble-fly larvae in the oesophagus and spinal canal]**. —*Arch. wiss. prakt. Tierheilk.* **76.** 414–424. [Previous parts not indexed]. **1611**

This paper deals with the biology of the first-stage larvae of the cattle warble flies, *Hypoderma bovis* and *H. lineatum*. The diagnostic features of the larval mouth parts are described and figured. In addition to slight differences in shape, for which reference to the figures should be made, the mouth parts of *H. bovis* were found to be less than 0·015 mm. in length whereas those of *H. lineatum* were usually larger in size. The major part of the material was collected during the period November to April. Of 1,460 larvae collected from the oesophagus, 636 specimens were definitely identified as *H. lineatum* and only one as *H. bovis*. Of 225 larvae from the vertebral canal, 114 were identified as *H. bovis* and none as *H. lineatum*. Of 48 first-stage larvae found under the skin, 21 were *H. bovis* and 7 were *H. lineatum*. It is concluded from these data that the larvae of these two species of warble fly follow different migration paths in the host, *H. bovis* passing normally through the vertebral canal and *H. lineatum* through the oesophagus.—J. B. CRAGG.

VANDERPLANK, F. L. (1944). **Studies of the behaviour of the tsetse-fly (*Glossina pallidipes*) in the field : the attractiveness of various baits.**—*J. Anim. Ecol.* **13.** 39–48. **1612**

The attractiveness of various baits to *G. pallidipes* was tested in a barrier thicket through which paths were cut, and the animal baits were either taken along the paths or tethered in pairs.

The order of attractiveness was (1) dog, ox, and porcupine, (2) domestic pig and a screen covered with black material, (3) sheep, goat, man, baboon, (4) serval cat, lion, jackal. Insufficient animals were used to exclude the possibility that the attractiveness was individual and not specific.

Observations on three different screens of the T-shaped hand-catching type were made. A screen scented with bush-pig caught only slightly more flies than an unscented screen, but V. adds that significantly increased catches have recently been obtained with screens scented with alcohol and ether extracts of the body surface of living bush-pig, ox, or sheep.—U. F. R.

CARTER, H. B. (1942). **A note on the occurrence of the follicle mite (*Demodex* sp.) in Australian sheep.** —*Aust. vet. J.* **18.** 120–124. **1613**

This is the first record of this parasite in Australian sheep. No clinical signs of its presence were observed, the mites being found by chance in skin sections. There were microscopic lesions in the form of inflammatory changes and pustule formation. The mites were found only in primary follicles, probably because the secondary follicles are not large enough to accommodate them. Attention is drawn to the published records of *Demodex* spp. in sheep. The breeds previously recorded as hosts are Cheviot, Scotch Blackface, and Halfbred, which are all types in which some follicles are big enough to harbour mites. In Australia the parasite was found in the skin of Border Leicester, Border Leicester × Merino crossbred, and strong-woolled Merino. It is thought that, owing to the small size of the follicles, *Demodex* spp. is unlikely to infest fine-woolled Merino sheep.

—H. McL. GORDON (AUSTRALIA).

See also absts. **1581** (vectors of Borna disease), **1598** (donkey louse as vector of murine typhus), **1623** (vectors of rabbit myxoma), **1630** (*Linguatula*), **1676**, **1701-1713** (insecticides), **1705**, **1741** (warble control).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

STEPHENSON, W. (1945). **Survival of *Fasciola hepatica* L. *in vitro*. [Correspondence]**.—*Nature, Lond.* **155.** 240–241. **1614**

The influence has been studied of agents controlling bacteria, and of pH, osmotic pressure, K/Na ratio, Ca/Na ratio, bile salts, and various sugars on the *in*

vitro survival of *F. hepatica*. It has been found possible to keep flukes alive for 60 hours at 36°C. in the following solution: 150 mM. [millimols] NaCl, 10 mM. KCl, 1 mM. $CaCl_2$, 6 mM. borax, 30 mM. glucose, at pH 8·6. The use of fructose instead of glucose and the addition of 1 : 5,000 trypanblue increases the survival time, but also increases the cost of the medium.—T. E. Gibson.

Dinaburg, A. G. (1944). **Development and survival under outdoor conditions of eggs and larvae of the common ruminant stomach worm, Haemonchus contortus.**—*J. agric. Res.* **69.** 421–433. **1615**

Faeces were collected from young rams carrying pure infestations of *H. contortus*. Twelve samples of the faeces were exposed out of doors, and four were kept inside at room temperature as controls. The samples were evenly distributed over the surface of pots of sterile loam planted with rye grass, some pots being kept in shade, some in partial shade, and some in full sun. The pots were examined at intervals up to 27 days. Air temperature, soil temperature and rainfall data were recorded daily.

When eggs of *H. contortus* were exposed out of doors for three days or more to a mean maximum temperature below 65°F., few pre-infective and no infective larvae were found during the experiment regardless of the rainfall. When the temperature was between 66°F. and 84°F. during the first three days the amount of rainfall affected the degree of development of the eggs. After 13–20 days out of doors when there was no rainfall, only 0·01% of the larvae were recovered; with 0·12–0·72 in. of rain 0·5% were recovered, and with 0·88–2·09 in., 21% were recovered. When the pots were exposed to full sunlight, fewer larvae survived than when they were kept in full or partial shade. Temperature appears to be a more significant weather factor than rainfall in determining which periods of the year are unfavourable for the development and survival of the eggs of *H. contortus*.—T. E. Gibson.

Deschiens, R., & Lamy, L. (1942). Comportement des hyphomycètes prédateurs en aérobiose et en anaérobiose. **[Action of predatory hyphomycetes in aerobic and in anaerobic conditions].**—*C. R. Soc. Biol. Paris.* **136.** 736–738. **1616**

It is known that predaceous hyphomycetes of the genera *Arthrobotrys* and *Dactylella* will capture and destroy *Strongyloides* larvae, which live in mud and shallow puddles of water, whilst they have little effect on *Bunostomum* larvae, which live in relatively deep water. In order to determine the conditions under which these fungi will develop, the authors maintained cultures of *A. oligospora*, *D. bembicodes*, and *D. ellipsospora* in test tubes containing fluid nutritive media of varying depths up to 20 cm. None grew under strictly anaerobic conditions. *A. oligospora* and *D. ellipsospora* would develop only in the surface layer of liquid, but *D. bembicodes* developed throughout the whole depth of the medium and was thus relatively anaerobic as well as aerobic. The authors conclude that, for the destruction of nematode larvae by such biological means, it is important to choose a fungus which will grow best under the conditions favoured by the particular nematode concerned.—M. L. Bingham.

See also absts. **1714** (anthelmintics), **1728, 1736, 1737** (technique).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Pelouro, J. T. (1943). Um novo caso de sarcoma de Sticker no cão. **[Two cases of venereal sarcoma in dogs].**—*Repos. Lab. Pat. vet., Lisboa.* **5.** 247–250. [English, French and German summaries]. **1617**

Two cases of venereal sarcoma are described. The first, occurring in a bitch, took the form of miliary nodules around the external orifice of the genital tract, with metastases in the spleen. In the second case, occurring in a male, the primary lesions were in the sheath and subcutaneous connective tissue of the perineum, and metastases were found in the liver and lungs. In both cases the histological picture was that of a true lymphosarcoma, a classical round-celled sarcoma.—Isobel W. Brocklehurst.

Hueper, W. C. (1944). **Seminoma in the testis of a dog.**—*Amer. J. clin. Path.* **14.** 418–421. **1618**

H. describes a seminoma of the Sertoli cell type (classified by some authors as adenoma or adenocarcinoma of Sertoli cells). In some parts of the tumour there were definite indications of an alveolar structure and the general cell and growth characteristics were against a teratomatous origin. Study of testicular tumours in the dog may be valuable in consideration of Ewing's contention that testicular tumours in man are teratomatous in nature.—E. G. White.

Gross, L. (1945). **The specificity of acquired tumor immunity.**—*J. Immunol.* **50.** 91–99. [Author's summary copied *verbatim*]. **1619**

Forty-five mice of the C3H inbred line were inoculated intracutaneously with a small dose of a spindle cell sarcoma (Sa 1) that had been originally induced with methylcholanthrene in an animal of the same line. All of the inoculated animals developed tumors, and 25 recovered spontaneously. These 25 mice were reinoculated with, and found immune to, sarcoma 1. Nineteen of these immunized animals were now submitted to intracutaneous inoculation of a rhabdomyosarcoma (Sa 2) that had also been induced with methylcholanthrene in an animal of the same inbred line. At the same time, 17 control animals were inoculated with equal, or smaller, doses of the same neoplasm (Sa 2). Fourteen of the 19 immunized mice, and 12 of the 17 controls developed tumors (rhabdomyosarcomas). In addition, 6 animals immunized against sarcoma 1, and 6 normal control mice were inoculated intracutaneously with a mammary carcinoma (Ca 1) that had originated spontaneously in a female of the same inbred line. Five of the immunized animals, and 6 control mice developed progressively growing carcinomas at the site of inoculation.

It results from these experiments that tumors may be immunologically different in spite of the fact that they originated in homozygous animals. This observation may be explained by assuming that immunity acquired against tumors is directed specifically against the tumor, as such, that had been used for immunization, and that tumor immunity is not caused by genetic differences between the cells of the host and those of the animal in which the tumor originated. The implications of these and previous observations are discussed. Acquired immunity to tumors, and natural resistance are discussed and compared with those observed in various communicable diseases. Finally, a classification of tumor immunity is suggested.

Andervont, H. B. (1944). **Influence of environment on mammary cancer in mice.**—*J. nat. Cancer Inst.* **4.** 579–581. **1620**

Strain C3H mice living in isolation develop mammary tumours earlier, on the average, than do litter mates living eight to a cage. This applies to virgin mice

isolated at four or 20 weeks of age, as well as to breeding mice segregated at the age of four weeks and mated at 12 weeks. Crowding or contact should not influence the genetic susceptibility or the "milk factor" but may interfere with hormonal stimulation. Investigation showed that the oestrous cycles in the segregated animals occurred earlier, were more frequent and lasted longer than in those living eight to a cage. This suggests that the results recorded were due to environmental conditions exerting an influence upon hormonal stimulation.
—Isobel W. Brocklehurst.

Rørdam, H. N. K. (1944). **Experimental studies on the significance of glutamic acid for the growth of malignant tumors.**—*Acta path. microbiol. scand.* **21.** 480–498. [In English]. **1621**

Experiments were conducted on inbred mice (Street strain) bearing transplanted Crocker sarcoma 180 to see whether glutamic acid is of importance for the growth of malignant tumours and, in particular, whether *l*-glutamic acid in excess is capable of restraining tumour growth by interfering with the utilization of the *d* form of the acid produced within the body. According to Kögl the autonomous growth of neoplastic cells is related to their ability to utilize *d*-amino-acids, particularly glutamic acid, for protein synthesis whereas normal cells can use only the *l*-amino-acids.

The experiments showed that an excess of *l*-glutamic acid limited tumour growth, but further work is needed to elucidate the way in which this change is brought about.—E. G. White.

Huggins, C., & Moulder, P. V. (1944). **Studies on the mammary tumors of dogs. I. Lactation and the influence of ovariectomy and suprarenalectomy thereon.**—*J. exp. Med.* **80.** 441–454. **1622**

The authors studied 31 female dogs with mammary tumours, 10 pregnant animals and 15 normal adult females. All the dogs with mammary tumours had lipoid-rich tumours in the adrenal cortex: in eight of these in which blood pressure was measured there was no evidence of hypertension.

Three types of mammary tumour occurred: diffuse connective tissue and epithelial proliferation often with associated cartilage and bone, solid sheets of epithelial cells, and cysts with papillomatous processes lined by columnar epithelium. In four dogs there were metastases in the lungs, and in one there were also secondary growths in the liver. All the metastatic tumours were intracystic papillary tumours, free from bone or cartilage.

In two dogs with papillomatous cysts the cysts were excised, opened, and sutured so that the epithelium of the cyst faced the rectus abdominis muscle. After 21 days bony spicules were found adjacent to newly formed neoplastic epithelium. This finding is of interest in relation to earlier work which showed that the epithelium of the urinary bladder is capable of inducing bone formation when transplanted into the parietal connective tissue of dogs.

In two-thirds of the dogs with mammary tumours there was an increase in serum alkaline phosphatase, but the level was too variable to be used as an indication of neoplastic activity. The mammary growths frequently secreted a dilute milk with a high content of citric acid, considerably above the level in the serum.

In most of the normal adult dogs ovariectomy prevented the secretion of milk in response to prolactin administration. In the animals with mammary tumours, however, lactation (natural or induced by prolactin) was maintained for several months after removal of both the ovaries and adrenals. All the dogs which were in a state of pseudopregnancy and some apparently normal dogs behaved in the same way as the dogs with mammary tumours.—E. G. White.

Bull, L. B., & Mules, M. W. (1944). **An investigation of *Myxomatosis cuniculi* with special reference to the possible use of the disease to control rabbit populations in Australia.**—*J. Coun. sci. Industr. Res. Aust.* **17.** 79–93. **1623**

This brief report is to be followed by a full report in the form of a bulletin. The chief results are as follows. The virus of myxomatosis is highly pathogenic for the European rabbit but does not cause disease in other native or domesticated animals. It spreads readily from rabbit to rabbit when close contact is provided and in a relatively small enclosure a colony of rabbits can be exterminated. The disease does not spread readily if contact is not close and prolonged. The disease can be transmitted by species of *Echidnophaga*, the stick-fast flea, and by species of mosquitoes. The inoculation of rabbits has been carried out successfully by mechanical means with a modified rabbit trap. When introduced into colonies of rabbits under field conditions myxomatosis exterminated the rabbits in some of the colonies but did not spread from colony to colony and eventually died out. In one experiment where the rabbit population was infested with *Echidnophaga* the disease spread from warren to warren and reduced the rabbit population from 500 to 17 within 60 days. Predatory animals such as foxes inhibit the spread of the disease because they remove sick rabbits. The authors conclude that, although the disease would not be successful in controlling rabbit populations under most natural conditions in Australia, it could be used for temporary control of a rabbit population where conditions were favourable for its spread.
—D. Forsyth Stewart (Australia).

Carr, J. G. (1944). **The tumour virus disseminated from Rous No. 1 tumours.**—*Proc. roy. Soc. Edinb.* Sect. B. **62.** 51–53. **1624**

Dissemination of virus occurs from cells of Rous sarcomas which disintegrate within the main growth as a result of inadequate vascularization, pressure, and formation of non-viable cells because of abnormal mitosis. C. tried to discover the reason for the absence of neoplastic action of virus disseminated in this way in tumour-bearing fowls. The presence of virus and the amounts of extractable virus were determined in the spleens, and sometimes in the livers, of fowls bearing Rous No. 1 tumours. Intracellular virus existing in the presence of antibody was detected by grafting the tissue into susceptible birds. The antibody diffuses away and the host cells which become infected with virus, and some of the grafted tumour cells (most of the latter die), develop into a progressive Rous No. 1 tumour.

The amount of virus detected in this way in the tissue richest in virus—the spleen—was only about 20 minimal infective doses per g. and this amount may well all have been contained within the blood and phagocytic cells in the tissues. In contrast, Rous tumours in similar hosts contain 10^5–10^7 minimal infective doses per g.—E. G. White.

Carr, J. G. (1944). **Lack of transmission of avian tumour virus from carrier hens to their offspring via the egg.**—*Proc. roy. Soc. Edinb.* Sect. B. **62.** 54–58. **1625**

Fowls infected with the Rous No. 1 sarcoma virus did not transmit the virus through the egg. There was also no evidence of transmission of virus from carrier to healthy birds in the same pen. Carrier hens transmit virus-neutralizing antibody to the yolk of the eggs which

they lay and this must make a considerable drain on the bird's antibody reserves, yet a high level of serum antibody is maintained : the latent virus present in carrier birds must thus be in a condition and position to stimulate antibody production although it fails to cause neoplastic growth. The antibody transmitted to the egg appears to be of little importance in affecting the resistance of the chick to the action of neoplastic viruses.

—E. G. WHITE.

See also absts. **1627** (avian leucosis complex), **1715** (Rous sarcoma).

DISEASES, GENERAL

OLSON, W. H., APPEL, M., & NECHELES, H. (1944). **Studies on a dog with severe asthmatic attacks.**—*Amer. J. clin. Path.* **14.** 413–417. **1626**

This is a detailed clinical and autopsy study of an aged mongrel dog (estimated at 15 years old) which showed severe dyspnoea on the slightest exertion. The electrocardiogram revealed auricular fibrillation and right heart preponderance. Ascites developed and the fluid was high in protein, the ratio of albumin to globulin was higher than in the blood, and there was some anaemia and considerable lowering of the plasma proteins in the circulating blood. The clinical diagnosis was enlargement of the right heart, heart failure, liver cirrhosis and ascites. The animal was destroyed and the main findings were interstitial fibrosis of the lungs, affecting both the alveolar walls and the capillaries and arterioles, hypertrophy and dilatation of the right auricle and ventricle, ascites, passive hyperaemia of the liver, and pulmonary emphysema.

The pulmonary fibrosis is attributed to an old interstitial pneumonia, probably a sequel of bronchopneumonia which failed to resolve and may have been due to distemper.—E. G. WHITE.

BRYANT, R. L., & JOHNSON, E. P. (1944). **Incidence of mortality in two strains of Single Comb White Leghorn chickens.**—*Poult. Sci.* **23.** 521–524. [Authors' discussion slightly amended]. **1627**

The results reported here are in agreement with those of Marble (1939) and Sturkie (1943) by showing that the viability of the domestic fowl can be influenced by careful selective breeding. Taylor and Lerner (1938), Bearse *et al.* (1939), and Hutt *et al.* (1941), in breeding for the control of the leucosis complex, have developed resistant and susceptible strains. The object of this study was not to attempt to develop strains which would be resistant or susceptible to any particular disease. However, the results show a highly significant difference between the strains in the incidence of the leucosis complex.

Sturkie reported that the three major causes of losses at the Alabama station were leucosis, respiratory diseases, and peritonitis. No mention was made of any accidental losses. These are in accord with the causes of deaths presented here with the exception that at times we have had severe losses from cannibalism and have had very few from respiratory diseases. Hutt and co-workers reported heavy losses from neoplasms, reproductive disorders, and internal parasites. It appears that the leucosis complex is a common, serious trouble confronted by all workers. Other causes of deaths vary greatly with the particular locality or strain of birds.

*HANSEN, A. E., & JENSEN, B. H. (1942). Et Tilfaelde af Periarteritis nodosa hos Svin. **[A case of periarteritis nodosa in swine].**—*Medlemsbl. danske Dyrlaegeforen.* p. 599. [Abst. from abst. in *Skand. VetTidskr.* **33.** 485 and 502]. **1628**

This pathological change was seen in the heart, kidneys and liver of a pig. It took the form of nodular or cylindrical thickening of the arterial wall causing more or less blockage of the lumen.—J. E.

MARCATO, A. (1942). Sulla calcolosi renale della specie bovine. Ricerche sul calcio e sul fosforo del sangue. **[Renal calculi in cattle : estimation of blood calcium and phosphorus].**—*Nuova Vet.* **21.** 43–48. **1629**

Cows with small renal calculi had raised serum calcium and considerable hypertrophy of the parathyroids. More severe cases tended to have less change in the parathyroids and sometimes normal serum calcium (8·1–12·8 mg. per 100 ml.) and phosphate (4·3–7·5 mg. P per 100 ml.). The chronic diffuse cases were often combined with raised serum phosphate (up to 12·4 mg. P per 100 ml.) and mild parathyroid hypertrophy. It is suggested that renal calculi are first formed as a result of parathyroid hypertrophy, but that as the lesions develop the parathyroids may recover. High values for serum phosphate occurred in old animals and were often found in animals with normal serum calcium.—E. B.

PELOURO, J. T. (1943). Processos hepáticos em bovinos açorianos. **[Liver lesions in cattle in the Azores].**—*Repos. Lab. Pat. vet., Lisboa.* **5.** 227–233. [English, French and German summaries]. **1630**

A large number of bovine livers are rejected on account of a parasitic condition which is believed to be caused by the larvae of *Linguatula serrata*, and on account of telangiectasis maculosa. The histopathological features of the lesions are described in this article.—ISOBEL W. BROCKLEHURST.

RAINEY, J. W. (1944). **A specific arthritis with pericarditis affecting young horses in Tasmania.**—*Aust. vet. J.* **20.** 204–206. **1631**

A report on six cases of a streptococcal infection involving proximal limb joints and the pericardial sac in young horses on hill farms in Tasmania. Clinically the condition was characterized by persistent high temperature, respiratory distress, a rapid and pounding heart action, and severe lameness due to acute arthritis of the shoulder or stifle joints or of both. Two cases treated with sulphanilamide (details of doses not given) died ; three cases treated with soluseptasine (varying dose rates) recovered and one case recovered without treatment.

R. stresses the importance of resting affected animals in the early stages of the disease if a fatal issue is to be averted, and considers that the tendency for the shoulder and stifle joints to be affected on the left side (*i.e.* on the side nearest the pericardium) may be significant.—D. C. BLOOD (AUSTRALIA).

BLACKBURN, P. S., & MCFARLANE, D. (1944). **Acute fatal dilatation of the stomach in the dog. (Torsion of the stomach).**—*J. comp. Path.* **54.** 189–199. **1632**

The authors present evidence that the conditions described in standard works as " torsion of the stomach " (a condition said to arise from mechanical causes, and to lead to acute distension of the stomach) and " acute dilatation of the stomach " (supposed to be a functional disturbance) are of common aetiology, in that gastric dilatation is the primary occurrence and cause of the torsion. They suggest that the acute dilatation is precipitated by a meal, often excessively large, which overwhelms a digestive system weakened, for example, by war-time feeding.

Five cases, all in large breeds of dog, were examined P.M. Four (group 1) showed a 270° clockwise twist of the oesophagus, the pylorus and the first part of the

duodenum lying on the left side of the distended stomach, and the duodenum and the splenic vessels crossing ventrally over the oesophagus, the former from left to right, the latter from right to left. One (group 2) showed a 90° anti-clockwise twist of the oesophagus, the pylorus and duodenum lying wholly to the right of the distended stomach, and the splenic vessels passing on the left side dorsal to this organ. Experimentally, it was found in the cadaver that the visceral disposition as seen in the group 2 case followed simple dilatation of the stomach produced by blowing air down the oesophagus, while by suitably placing the spleen and splenic vessels before dilating the stomach, the disposition seen in the group 1 cases could be reproduced. —E. COTCHIN.

WEBB, R. M. (1944). **Congenital communicating hypertensive hydrocephalus in a dog.**—*Aust. vet. J.* **20.** 231–233. **1633**

A description of a case of congenital communicating hypertensive hydrocephalus in a dog aged seven weeks. The stage at which the condition commenced is discussed in the light of the anatomical peculiarities of the brain. The cause of the condition was not determined. —R. M. WEBB (AUSTRALIA).

See also absts. **1604** (inflammation), **1650, 1652, 1653** (haemorrhage), **1660, 1661** (sterility), **1670** (shock), **1671** (fever), **1716** (avian coryza), **1744, 1745** (toxic hepatitis), **1659** (cattle diseases in the Belgian Congo), **1746, 1747** (livestock diseases in New South Wales), **1748** (in New Zealand), **1749** (in Ajmer-Merwara, India), **1750** (in Kenya), **1751** (in Nyasaland), **1755** (clinical and radiological diagnosis in small animals).

NUTRITIONAL AND METABOLIC DISORDERS

PELOURO, J. T. (1943). Eqüídeos com osteodistrofia fibrosa, em Portugal. **[Equine osteodystrophia fibrosa in Portugal].**—*Repos. Lab. Pat. vet., Lisboa.* **5.** 211–221. [English, French and German summaries]. **1634**

Eighteen cases of equine osteodystrophia fibrosa with seven deaths are recorded. There was swelling of the upper and lower maxillae, intermittent lameness, difficulty in mastication, progressive emaciation, and finally, posterior paralysis. P. gives the clinical history, describes the gross and microscopical findings in the disease, and discusses the aetiology and pathogenesis. —ISOBEL W. BROCKLEHURST.

SHEARER, G. D., & MCDOUGALL, E. I. (1944). **Some observations on swayback disease of lambs.**—*J. agric. Sci.* **34.** 207–212. **1635**

Ewes with a low blood Cu status rapidly attained normal blood values on transference from the Derbyshire "swayback" area to Cambridge. Samples of pasture obtained from different parts of the country where "swayback" is endemic showed no evidence of Cu deficiency *per se*, values ranging from 4·9–22·2 parts of Cu per million of dry matter being recorded, nor was there any general evidence of abnormally high Pb figures. The possible relationship of Pb ingestion to "swayback" is discussed, with the conclusion that this element plays at most a minor role in the aetiology of the disease. It is considered that the Derbyshire "swayback" disease is related to a "conditioned" Cu deficiency and that Pb merely accentuates the pathological changes produced in this type of Cu deficiency. Further studies are being made with a view to determining more exactly the role of Pb, and possibly F, in the condition. —A. EDEN.

MCINTOSH, R. (1944). **Disorders of the digestive system leading to vitamin deficiency states in infants and children.**—*Bull. N.Y. Acad. Med.* **20.** 25–33. **1636**

A general discussion on vitamin deficiency, emphasizing that besides being caused by ignorance and inaccessibility of supply, it may be secondary to disorders of the digestive system, which may lead to inadequate absorption and utilization.

Vitamins A and K are most frequently linked to defective absorption and whereas the water-soluble vitamins are adequately absorbed in all but the most severe disorders, their proper utilization in enzyme reactions in the metabolic process cannot be relied upon. —S. M. G.

*ZIEBOLD, H. (1942). Grundsätze neuzeitlicher Fütterung und dabei beobachtete Gesundheitsstörungen beim Schwein. **[Disease in pigs related to modern methods of feeding].**—*Inaug. Diss., Berlin.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **51.** 114–115]. **1637**

The paper discusses home-produced substitutes for imported protein-rich foodstuffs, *e.g.*, meat meal, blood meal, whale meal, lupins etc. The use of amides as a protein substitute was unsuccessful. As regards disease, when modern foodstuffs were used, deficiencies of vitamin A and D were the chief troubles but lack of vitamins B and C were never observed.—A. R.

I. & II. —. (1943). **Annotated bibliography supplements:– Vitamin B_6 (pyridoxine),** pp. 30; **Pantothenic acid,** pp. 37. Rahway, N.J.: Merck & Co. [4to]. **1638**

III. —. (1944). **Annotated bibliography. Biotin.** pp. 104. Rahway, N.J.: Merck & Co. [Revised edit.] **1639**

I, II, & III. These booklets continue the series on vitamins, the current knowledge being arranged under similar headings. [See also *V. B.* **13.** 367.] —E. M. J.

VANDEMARK, N. L., & SALISBURY, G. W. (1944). **The concentration of some B vitamins in bull semen.** —*J. biol. Chem.* **156.** 289–291. [Authors' summary copied *verbatim*]. **1640**

The thiamine, riboflavin, pantothenic acid, and niacin content of fresh bull semen were found to be 0·89, 2·09, 3·71, and 3·63 γ per c.c., respectively. The spermatozoa count was correlated with the concentration of all four vitamins. Initial sperm motility was correlated with the concentrations of thiamine, riboflavin, and niacin.

PEARSON, P. B., SHEYBANI, M. K., & SCHMIDT, H. (1944). **The B vitamin requirements of the horse.** —*J. Anim. Sci.* **3.** 166–174. **1641**

Experiments were carried out with two groups each of six Shetland ponies initially about nine months of age. A basal diet comprising 60–63% dried beet pulp, 26–29% ground maize, 10% purified casein, and 1% dicalcium phosphate, together with sodium chloride *ad lib.* and a vitamin A and D concentrate once weekly, failed to support growth. The addition of 10% (but not of 5%) brewer's yeast to the basal diet permitted satisfactory growth, as did the provision of rice straw *ad lib.* Equally satisfactory results were obtained when the basal ration was supplemented with synthetic riboflavin and pantothenic acid. The minimum level of pantothenic acid for optimal growth was not determined, but that of riboflavin was found to be about 44 mg. per kg. body weight daily. This was supplied with a diet containing 0·35 mg. riboflavin per 100 g. [See also following abst.]—A. N. WORDEN.

PEARSON, P. B., SHEYBANI, M. K., & SCHMIDT, H. (1944). **Riboflavin in the nutrition of the horse.**—*Arch. Biochem.* **3.** 467–474. **1642**

Shetland ponies about nine months old were fed on experimental rations furnishing amounts of riboflavin which varied from 0·08–1·18 mg. per 100 g. of food. In the pre-experimental period the animals received a stock diet, and on this the urinary excretion of riboflavin was 1–2 mg. per day. On the experimental rations, the amount excreted in the urine was closely related to the intake, the excretion on the low levels of riboflavin (*i.e.* on an intake of 9·4 μg. per kg. body weight) being about 0·03 mg. per day, and on the higher levels (*i.e.* on an intake of 44 μg. per kg.) about 1·5 mg. From the results obtained it is concluded that riboflavin is essential for maintenance of growth and health in the horse and that an intake of 44 μg. per kg. of body weight was adequate under the conditions of the experiment. The blood riboflavin did not appear to be correlated with the amount ingested.—E. M. C.

HILL, F. W., NORRIS, L. C., & HEUSER, G. F. (1944). **Studies of unidentified vitamins required by the chick.**—*J. Nutrit.* **28.** 175–188. **1643**

The existence of two unidentified chick growth factors, designated factor R and factor S (which are distinct from folic acid, *Lactobacillus casei* factor and vitamin B_c), was confirmed. No evidence was obtained as to whether folic acid is or is not required by the chick. If it is required, the amount appears to be less than 15 μg. per 100 g. of diet.—E. M. CRUICKSHANK.

See also abst. **1748** (" peat scours " etc. in New Zealand).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

BLAXTER, K. L., & PRICE, H. (1945). **Variation in some physiological activities of dairy cows—I & II.**—*Vet. J.* **101.** 18–24 and 39–48. **1644**

The results are given of detailed studies on four cows over a period of nearly a year during which heart and respiration rates, body temperatures and milk yields are recorded. Pregnancy caused considerable increases in both heart rate and body temperature. During the last three months, the heart rate increased by 15–40%, whilst the rectal temperature rose by 0·75°–1·25°F. in the six weeks before calving. Respiratory changes in this period were only slight. Increases in heart rate tended to be associated with increased milk production, an increase of the heart rate by ten beats per min. corresponding to an increased yield of some 2–3 gall. per week. Heart rates were very high during the spring months but fell off as the pasture supply deteriorated and increased with the autumn flush of grass ; throughout the winter the rates were much lower. Environmental temperature had a marked effect on respiration which increased nearly 100% for each rise of 18°F.—ALEX. ROBERTSON.

TWEEDY, W. R., & CAMPBELL, W. W. (1944). **The effect of parathyroid extract upon the distribution, retention and excretion of labeled phosphorus.**—*J. biol. Chem.* **154.** 339–347. **1645**

Rats were injected with sodium phosphate containing radioactive phosphorus and treated with parathyroid extract. The animals' tissues were then examined for radioactive phosphorus. Over a 48-hour period the concentration of radioactive phosphorus was higher in the liver and kidneys of treated rats than in control rats which received only sodium phosphate containing radioactive phosphorus. Parathyroid extract increases the urinary excretion and decreases the faecal excretion of radioactive phosphate from bones between the 18th and 24th hours of treatment.—E. BOYLAND.

ZITNIK, W. (1942). Über die Verdauungsleukozytose beim Pferd. **[Digestive leucocytosis in the horse].**—*Wien. tierärztl. Mschr.* **29.** 505–506. [*Inaug. Diss., Vienna*—only abst. given]. **1646**

The average white cell count of horses under normal conditions is 5,500 per cu. mm. ; in the fasting animal this value falls to 3,000. The maximum value occurs 2–3 hours after feeding and is independent of the type of food given.—A. T. PHILLIPSON.

NEBAUER, I. (1942). Über die Senkungsgeschwindigkeit der roten Blutkörperchen beim kastrierten und nicht kastrierten Schwein. **[The erythrocyte sedimentation rate in castrated and uncastrated pigs].**—*Wien. tierärztl. Mschr.* **29.** 506. [*Inaug. Diss., Vienna*—only abst. given]. **1647**

The sedimentation rate of red blood corpuscles is more rapid in castrated male and female pigs than in entire pigs.—A. T. PHILLIPSON.

*LØJE, K. (1942). Blodtransfusion hos de store Husdyr. **[Blood transfusion for larger domestic animals].**—*Medlemsbl. danske Dyrlaegeforen.* p. 553. [Abst. from abst. in *Skand. VetTidskr.* **33.** 485 and 501–502]. **1648**

Indirect transfusion was used, blood being drawn into flasks containing sodium citrate. Compatability was tested by a preliminary injection with the batch of blood to be injected. Calves and foals were injected with 300–600 ml. and fully grown cattle and horses with 2–4 litres. Clinical indications are only vaguely mentioned in the abstract, *e.g.*, anaemia resulting from haemorrhage or disease.—J. E.

RAMSAY, W. N. M. (1944). **Ferrihaemoglobinaemia (methaemoglobinaemia) in man and the horse.**—*Biochem. J.* **38.** 470–473. **1649**

Haemoglobin (ferrohaemoglobin) was determined in blood through the oxygen capacity. Total haemoglobin was determined after reduction with titanous citrate. In about half the human blood specimens examined the total haemoglobin exceeded the ferrohaemoglobin by 1% or more (maximum 6% in 38 samples). Methaemoglobinaemia (as measured by the excess of total haemoglobin over ferrohaemoglobin) appears to be more frequent in horses. Of 17 equine blood specimens examined 11 had over 4% methaemoglobin. One sample had 23·5% and another 17·5% methaemoglobin.—E. BOYLAND.

SHARPEY-SCHAFER, E. P. (1944). **Circulatory dynamics of haemorrhage.**—*Brit. med. Bull.* **2.** 171–173. **1650**

Studies of circulatory dynamics after haemorrhage show that there are species differences in the time taken for restoration of blood volume. Dilution of haemoglobin and restoration of blood volume after bleeding are slow in man and new methods have given further information on circulatory dynamics in the human subject. The author and various other workers have made accurate serial estimations of cardiac output in man by cardiac catheterization, over 500 estimations having been made without complication. Aspects studied include the effects of bleeding and of atropine administration in normal subjects, the physiology of post-haemorrhagic fainting following venesection (concomitant vascular changes in the forearm studied by the Lewis and Grant plethysmograph), and the late effects of haemorrhage. The evidence in general indicates that haemorrhage causes changes in venous pressure which are of considerable importance both in the process of

spontaneous recovery and in assessing the effects of transfusion.—E. G. WHITE.

HELMREICH, K. (1942). Das refraktometrische Verhalten des Blutserums bei der Hyperglykämie. **[Refractometry of blood serum in hyperglycaemia].** —*Wien. tierärztl. Mschr.* **29.** 506. [*Inaug. Diss., Vienna*—only abst. given]. **1651**

Alimentary hyperglycaemia induced in dogs is accompanied by a decrease in the refractive index of the serum which is due to hydraemia. Adrenalin hyperglycaemia is accompanied by an increase in the refractive index of the serum which is due not to blood sugar but to decrease in the water content of the blood.

—A. T. PHILLIPSON.

STEINMAN, R. (1942). Über den Einfluss von grossen Aderlässen auf die Blutgerinnungszeit und auf die Viskosität des Blutes. **[The influence of severe haemorrhage on the coagulation time and the viscosity of the blood].**—*Wien. tierärztl. Mschr.* **29.** 506–507. [*Inaug. Diss., Vienna*—only abst. given]. **1652**

Regeneration of blood was studied in dogs following the removal of one-third of the total volume by heart puncture. The coagulation time and viscosity of the blood fell during the first 24 hours after haemorrhage. Regeneration was complete 8–10 days later according to the nitrogen content of the blood and to the viscosity. Coagulation time became normal in 4–6 days.—A. T. P.

ARMBORST, H. (1942). Rote und weisse Blutkörperchen nach grossen Aderlässen. **[Red and white blood corpuscles after severe haemorrhage].**—*Wien. tierärztl. Mschr.* **29.** 506. [*Inaug. Diss., Vienna*—only abst. given]. **1653**

About one-third of the blood volume was withdrawn from dogs by heart puncture. The erythrocyte count was depressed four hours later and after a transitory rise continued to fall for 48 hours. These events are ascribed to emptying of blood reservoirs and dilution by tissue fluid. The white cell count varied conversely with the red cell count, the increase being due to polymorphonuclear neutrophiles.—A. T. PHILLIPSON.

SCHLEICHER, E. M. (1944). **The volumetric pattern of aspirated normal human sternal marrow of males 18 to 40 years.**—*Amer. J. clin. Path.* **14.** 370–379. [Author's summary copied *verbatim*]. **1654**

The volumetric pattern is presented of 1 cc. aspirated, heparinized and centrifuged human sternal marrow of twelve healthy males from 18 to 40 years.

The four gross components (sharply separated in the hematocrit tube) show a remarkable uniformity of their respective volume range. The range and mean were as follows: Fat 0·5 to 3·0, mean 1 volume per cent; Plasma 39 to 48·5, mean 44 volumes per cent; Myeloid-Erythroid (M-E) 4 to 6, mean 5 volume per cent; Erythrocytes 45 to 54, mean 50 volume per cent. The volumetric data differ from those recorded in the literature. The reason for the discrepancy is pointed out.

A method is described for obtaining "gross marrow units" suitable for histologic work up and determining the pattern of the normal "microscopic marrow unit". The combined volumetric-histologic method may be used as a means of elucidation of the functional state of the sternal part of the marrow organ and by the same token the normality of the organ as a whole.

The statistically analysed volumetric data presented here are sufficiently constant to believe that the obtained volumes are normal, i.e., within the biologic variable, error of chance and represent a "standard of comparison" permitting evaluation of the volumetric pattern of the sternal marrow of the female, child and the aged.

PLUM, C. M. (1941). **The composition of the bone marrow in normal adults. I. The cells of the bone marrow. II. Histological examinations.**—*Acta med. scand.* **107.** 11–31 & 32–52. [In English]. **1655**

I. A review of the literature dealing with the cytology of the bone marrow.

II. In this article P. describes the results of differential counts of bone marrow smears obtained by sternal puncture from 40 persons over 18 years of age. The findings are compared with those of other workers. A common nomenclature and haemomyelogram are suggested to avoid confusion in future studies. After the 18th year there was no evidence of any definite correlation between age and the bone marrow picture.

—E. G. WHITE.

SHONYO, E. S., & MANN, F. C. (1944). **An experimental investigation of renal circulation.**—*Arch. Path.* **38.** 287–296. **1656**

Renal arterial casts, prepared by the injection of a new liquid synthetic rubber compound called neoprene, demonstrated the presence within the renal tissue of the normal animal of circulatory channels which by-pass the glomerulus. There were three types, direct continuations of the interlobular arteries into the capillaries of the cortex corticis, vessels which by-passed the glomerulus in the corticomedullary zone and passed into medullary channels, and direct arteriovenous "shunts" in the corticomedullary zone.

In experimentally produced hypertrophy the results of previous workers were confirmed in that there was glomerular enlargement and an increase in diameter of the smaller vessels. In casts prepared from animals with experimental hypertension, however, it was impossible to state with certainty that the two features observed, the constriction of the afferent glomerular arterioles and the incomplete formation of some glomerular tufts, were due to the pressure of enlarged afibrillar cells in the walls of these vessels, as has been suggested by other workers, as histological sections were not available.

The figures of casts exhibited are very instructive.

—C. W. OTTAWAY.

LANGHAM, R. F., INGLE, R. T., & HALLMAN, E. T. (1942). **Further studies on the histology of the bovine kidney.**—*Amer. J. vet. Res.* **3.** 260–267. **1657**

Continuing earlier work [see *V. B.* **10.** 108], the authors have studied various macroscopic and histological features of the bovine kidney. The thickness of the cortex increases from 3–6 mm. in the nine months' foetus to 11–12 mm. in the adult; during the same interval the medulla increases from 14–19 mm. to 29–31 mm. The number of glomeruli was 800,000–1,700,000, with an average of 1,000,000 per kidney. The diameter of the glomerulus increases from 78μ at birth to 221μ at six years of age. The average diameter of the afferent arteriole is 24μ, the efferent arteriole 14μ. The diameter of the various parts of the renal tubules was measured in animals of different ages and there are photomicrographs showing the main histological features of the nephron.—E. G. WHITE.

DICKERSON, G. E., & HAZEL, L. N. (1944). **Effectiveness of selection on progeny performance as a supplement to earlier culling in livestock.**—*J. agric. Res.* **69.** 459–476. **1658**

The authors have made a statistical examination of examples of genetic progress expected from selection based on pedigree, individual performance, or averages for collateral relatives, with and without the supplementary use of the progeny test, for representative

economic traits of farm animals. They conclude that a regular plan of progeny testing is unlikely to increase, and may reduce, the rate of progress unless the progeny-test information becomes available early in the tested animal's lifetime, the reproductive rate is low, or the basis for making early selection is relatively inaccurate. These factors are largely beyond the breeders' control, being relatively unchangeable for a particular kind of animal and trait. Opportunity for improvement from selection is nearly maximum for most traits when culling is based on individual performance, family average, and pedigree and when the interval between generations is kept short. These conclusions do not conflict in any way with the fact that unbiased progeny-test information always increases the accuracy of selection for traits that are influenced much by dominance, epistasis, or environmental variations. They mean that in the time required to carry out the progeny test the genetic progress from selection based on pedigree, individual merit, or family averages may be more than that obtained from selection on the progeny test.—N. J. Scorgie.

Tobback, L. (1944). **Cattle-breeding in the Belgian Congo.**—*Message.* No. 38. pp. 36–41. **1659**

The Belgian Congo is not, properly speaking, a cattle-breeding country, and the region occupied by native herds represents only a tenth of the area of the colony. Cattle-breeding centres were established as early as 1880, and in 1925, so that the importation of meat might be avoided, they were considerably expanded, encouragement being given to the formation of large companies with sufficient capital to develop land which had previously lain idle, and to carry over the long period before returns could be expected. These companies operated in the Lower Congo, Katanga and Lomani-Kasai areas, tropical savanna country where native stock raising had failed on account of disease.

The early importations of stock consisted of cattle from Angola which were of a mixed *Bos taurus—Bos indicus* type. Later Hereford cattle were imported from England, with excellent results, together with Hereford, Friesian and North Devon bulls from South Africa. Thousands of Afrikaander type cattle were also imported, and crossed with the European breeds.

The most important diseases which had to be overcome were trypanosomiasis, East Coast fever, epizootic abortion, bovine contagious pleuro-pneumonia, helminthiasis and dermatitis, but a considerable veterinary staff was made available, and five principal research laboratories provided. There are now 173,153 head of cattle at these breeding centres which provide 19,400 tons of meat annually, in addition to milk, butter and cheese. The extension of the grazing grounds has brought into production five million acres of land, which would otherwise have been idle.

Native cattle exist in large numbers only in the upland areas of the north-west and sough-west. In the former area a small breed of the zebu type occurs, probably of Asiatic origin. In the south-west the cattle are of the long-horned Ankole type which probably originated in Abyssinia.

Veterinary services are provided to assist native cattle owners, and instruction is given in modern zootechny at experimental stations.—U. F. Richardson.

Rosenberger, G. (1943). Wert und Grenzen der Fruchtbarkeitsuntersuchungen der Ziegen-Jungböcke auf den Absatzveranstaltungen. **[The value of examining young male goats for fertility at markets].**—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 327–329. **1660**

R. describes a method of examining young billy goats for fertility at livestock sales. The genitalia are examined by inspection and palpation. The testes and epididymis receive special attention since the most common conditions causing infertility in young male goats are said to be hypoplasia of the testes and spermatic obstructions. These obstructions of the epididymis appear as firm nodules and can be detected by palpation if the goats are over four months old.

During the years 1938 and 1940, 596 goats were examined, 80 of which proved to be infertile; 38 of the infertile goats were detected at the sales. As experience was gained a higher percentage of infertile males was detected. In 1941 and 1942, of 1,375 goats examined, 205 were infertile and 167 of these were rejected at the markets. This improvement was due to the recognition of more cases of spermatic obstruction. R. concludes that these examinations are of great value to the goat-breeding industry, but that there is still room for improvement.—Alfred T. Cowie.

Hirt, E. (1943). Über den Brunstzyklus und die Unfruchtbarkeit der Stute. **[The oestrous cycle and infertility in the mare].**—*Schweiz. Arch. Tierheilk.* **85.** 353–365 & 391–402. **1661**

H. stresses the great importance of the correct timing of service if a high fertility rate is to be obtained in mares. The literature dealing with oestrus and the oestrous cycle of the mare is reviewed in considerable detail, ranging from observations of Aristotle to the most recent investigations. The many divergent observations make it impossible to give a clear picture of the reproductive cycle in the mare. The great variations in length and intensity of oestrus, with the consequent difficulty of procuring service at the time when the ovum is ready for fertilization, largely explain the low conception rates frequently reported in mares. The author advises vaginal examination and palpation of the ovaries *per rectum* to ascertain the most favourable time for service.

The various pathological conditions of the genitalia of the mare and stallion, and other factors contributory to infertility such as unsatisfactory animal husbandry and genetic factors, are reviewed and discussed; suggestions are put forward for obtaining higher conception rates.—Alfred T. Cowie.

Casida, L. E., Dutt, R. H., & Meyer, R. K. (1945). **Alteration of the estrual cycle by pituitary gonadotropins and persistence of the effects upon reproductive performance in ewes.**—*J. Anim. Sci.* **4.** 24–33. **1662**

Thirty Wisconsin ewes were treated with extracts of pituitary gland to determine whether it was possible by means of gonadotropic hormones to regulate the time of oestrus and so facilitate artificial insemination and obtain greater uniformity of the lamb crop.

Two types of extracts were used, an unfractionated extract and a purified follicle-stimulating extract. Fifteen ewes were placed on each treatment, each group was divided into three subgroups of five ewes, and injections were commenced in the subgroups on the fourth, eighth, and twelfth day respectively of the oestrous cycles. The extracts were given by subcutaneous injection for four days followed in both groups by an intravenous injection of the unfractionated extract.

The effect of the treatment on the length and uniformity of the oestrous cycle and the duration of the subsequent oestrus was investigated and the data treated statistically. The unfractionated extract increased, in the three subgroups, the length and variation of the oestrous cycles during which the treatment was begun. The follicle-stimulating extract, however, only increased the variation when treatment was begun on the eighth day of the cycle, otherwise it had no evident effect. Treatment with either type of extract in the

four- and eight-day groups shortened the subsequent oestrous period ; in the twelve-day groups oestrus was shortened by the unfractionated extract and lengthened by the follicle-stimulating extract. These results are discussed in relation to the differences in the gonadotropic action of the two extracts. It is concluded that neither extract was of any practical value in controlling the time of oestrus.

To investigate the effects of the above treatments on fertility, the ewes were inseminated, beginning at the first oestrus following the injections. The breeding results appeared to be closely associated with the degree of physiological disturbance caused by the gonadotropins. Ten ewes became pregnant from 20 inseminations among the animals receiving the unfractionated extracts, and 14 conceived from 19 inseminations among the ewes receiving follicle-stimulating extract.

—Alfred T. Cowie.

Casida, L. E., & Warwick, E. J. (1945). **The necessity of the corpus luteum for maintenance of pregnancy in the ewe.**—*J. Anim. Sci.* **4.** 34–36. **1663**

The ovaries were removed from nine pregnant ewes and the corpora lutea of pregnancy enucleated from two pregnant ewes. Removal of the corpus luteum at the 30th day of pregnancy produced abortion in one ewe. Four of six ewes ovariectomized between the 54th and 77th day of gestation aborted, as did one of four ewes ovariectomized between the 99th and 103rd day. Of the five ewes which did not abort, four produced normal lambs ; the fifth was suspected of suffering from pregnancy toxaemia and her lambs were born dead. Two of the ovariectomized ewes were allowed to nurse their lambs and judging from the growth rate of these lambs, lactation was apparently normal. From the limited data it would appear that in some cases after the 55th day of gestation, the corpus luteum may not be necessary for the maintenance of pregnancy in the ewe.—Alfred T. Cowie.

Petersen, W. E., Knodt, C. B., Ludwick, T. M., & Pomeroy, B. S. (1944). **Mammary development in the thyroprived bovine by stilbestrol and thyroprotein administration.**—*Proc. Soc. exp. Biol., N.Y.* **57.** 332–334. **1664**

No mammary development was obtained when diethylstilboestrol was administered to thyroidectomized cows. When however thyroprotein was administered along with the oestrogen, mammary development became evident as soon as the myxoedematous symptoms disappeared. It appears that some phase of the myxoedema syndrome is responsible for the lack of response to diethylstilboestrol in the thyroidectomized cow.—Alfred T. Cowie.

Levin, L. (1945). **The fecal excretion of estrogens by pregnant cows.**—*J. biol. Chem.* **157.** 407–411. **1665**

Faeces collected from cows in the last few weeks of pregnancy contained 5,000–10,000 rat units of oestrogen per kg. of dry faeces (calculated as α-oestradiol this amounts to 0·9–1·4 mg. oestradiol per kg. faecal solids).

Chemical and physiological tests applied to the oestrogen indicated that it was practically all oestradiol. There was no evidence of conjugated oestrogens in the faeces. Whether the oestradiol is formed from another oestrogen by the activity of the intestinal flora or whether it enters the gut as oestradiol via the bile or blood stream is not known.

By oven-drying the faeces at 70°–80°C. before extraction of the oestrogen, part of the oestrogen was converted to a ketonic form, presumably oestrone, with a coincident loss of a considerable portion of the extractable active material.—Alfred T. Cowie.

Nichols, C. W., Jr. (1944). **The embryology of the calf : fetal growth weights, relative age and certain body measurements.**—*Amer. J. vet. Res.* **5.** 135–141. **1666**

101 foetuses with crown-rump lengths varying from 22–680 mm. were used in an endeavour to establish a normal growth curve : age, weight and crown-rump length. Other dimensions included sternal notch to pubis, occipito-frontal, and horizontal and dorso-ventral diameter, both at umbilical level. A comparison of these measurements with crown-rump lengths indicated that the dimensions of the major body regions bear a nearly constant ratio to the total body length. The ages of representative specimens were estimated by using the age-length-weight relationship established by Winters *et al.* [see *V. B.* **14.** 208]. The apparatus used for measuring all except small embryos is illustrated. It consists of a flat metal table with two fixed planes. Two movable planes, attached to horizontal and vertical metric scales, are used for making actual readings of cephalo-caudal and dorso-ventral measurements.

—C. W. Ottaway.

Grahame, T. (1944). **The kidney of the Indian elephant.**—*Vet. J.* **100.** 97–102. **1667**

Celluloid casts of the ureter and arterial trees were made from the left kidney of a 36-year-old Indian elephant. The course of the ureter indicated that the kidney was lobulated. At the hilus it divided into two major calyces, the anterior and the posterior. The anterior calyx gave origin to an intermediate or middle calyx. From these three major ducts, 10 minor calyces took origin. The minor calyces terminated by forming one central and two lateral recesses into which the renal tubules opened. The majority of these opened into the lateral recesses, where it is possible that several tubules (ducts of Bellini) fuse to form what is referred to in the literature as the " tubus maximus ". A characteristic feature of this area of the urinary system was the size of the major calyces.

The arterial cast conformed to the general mammalian pattern. The branches of the renal artery at first followed the course of the calyces and then divided into interlobar arteries which were not so selective in distribution. No particular features were noticed in the arcuate, interlobular and glomerular arteries.

—C. W. Ottaway.

Grahame, T. (1944). **The ureter and arterial blood supply to the kidney of the camel. (Camelus bactrianus).**—*Vet. J.* **100.** 257–261. **1668**

The kidney of the camel is unilobar. The ureter opens into a pelvis which has a well-marked renal crest. The free margin of the pelvis forms a series of buttresses with interposed fissures, which interlock with the pyramids.

A dorsal and a ventral branch is given off from the renal artery at the hilus, one being distributed on either side of the pelvis. The main course of these arteries is along the line of the renal crest. The interlobar arteries in the main follow the course of the buttresses. Arcuate vessels exhibit a great variety of pattern and wide ramifications. The segmental arrangement of partially independent units of kidney tissue is well demonstrated in this species.—C. W. Ottaway.

Scherger, L. A. (1945). **The anatomy of the external ear of the dog. With suggested nomenclature for heretofore unnamed structures.**—*Vet. Med.* **40.** 61–64. **1669**

There are many unnamed structures within the conchal cartilage of the ear of the dog. The majority of these are associated with the helix and the tragus, and the names suggested by S. are in accordance with

their relation to these two features. Among the structures referred to is the perpendicular pouch situated on the lateral border of the concha. It is a constant feature and the name helicine pouch is suggested. The notch in the inner wall of the pouch is called the interhelicine notch. Two transverse cartilaginous ridges pass across the concavity of the ear from the helix towards the lateral border. They are called the superior and inferior antihelix. The superior antihelix tends to separate the ear into two areas: that above might be called the fossa auricularis, and that below, where the funnel narrows to form the auditory canal, the cavum concha. The inferior antihelix is on the wall of the cavum concha and has sometimes been referred to falsely as a skin fold. Other structures named are not of great significance.—C. W. Ottaway.

Popják, G. (1944). **Lipids of the rat adrenal in shock caused by experimental crushing injury.**—*J. Path. Bact.* **56.** 485–496. **1670**

Shock was produced in rats by binding one hind leg tightly for five hours with rubber bands thus producing muscle necrosis. Twenty-four hours later the rats were killed and the adrenal glands examined histologically and chemically.

The adrenals of rats subjected to shock were 31–42% heavier than the glands from control animals. The increase in weight was due to an addition of cytoplasm and a slight but significant increase in water content. The degree of adrenal enlargement was, within limits, proportional to the volume of necrosed muscle.

The adrenal cortex of the experimental rats showed enlargement of the zona fasciculata and zona reticularis. The medulla and zona reticularis were markedly hyperaemic and in females there were frequently haemorrhages extending into the zona fasciculata. The amount of stainable fat was considerably reduced. Chemical analyses showed that the fat depletion was due to loss of cholesterol ester. In four cases examined 48 hours after the injury, lipoid distribution was again normal.

The phenylhydrazine test, when applied to frozen sections of adrenals, showed greater phenylhydrazone formation in the glands of the experimental animals. Under the conditions of the test it was probable that this result was due to the presence of keto-steroid hormones. This would support the suggestion that cholesterol is an important precursor of the adrenocortical hormones. Attempts to confirm the increase of keto-steroids by quantitative chemical analyses were inconclusive owing to the relatively small amounts of material available.—Alfred T. Cowie.

Menkin, V. (1944). **Chemical basis of fever.**—*Science.* **100.** 337–338. **1671**

Fever is associated with some form of cell injury, and a substance located in the euglobulin fraction of exudates has been incriminated as the pyrogenic agent. Preliminary evidence has suggested that a pyrogenic factor is liberated from red blood cells. An exudate from the pleural cavity of dogs was treated with ammonium sulphate solution at one-third saturation and subsequently treated with distilled water and dialysed. Two fractions, a pyrogenic and a non-pyrogenic fraction were obtained. The latter was termed necrosin and the former, associated with the precipitate from one-third $(NH_4)_2SO_4$ saturation, was called pyrexin. This factor was associated with the euglobulin fraction but differed from euglobulin in being essentially insoluble in the presence of salts. Pyrexin is thermostable, innocuous to mice and induces no appreciable cutaneous reaction in rabbits, in contrast with necrosin. The essentially non-pyrogenic property of the latter can be transformed into a powerfully pyrogenic fraction by a few hours' incubation and pyrexin may perhaps be an enzymatic product of necrosin acting on a euglobulin substrate.

Pyrexin may be demonstrated in the urine of dogs suffering from experimental pleurisy. In composition it appears to contain 11% N and 1% P. It gives negative biuret and Molisch's tests but a positive ninhydrin test; it is insoluble in ether, 95% alcohol and strong acids, but is soluble in weak alkali and fails to be inactivated by crystallized trypsin. The inhibitory action of barbiturates and antipyretics suggests that pyrexin acts on fever centres in the hypothalamic region. The basic mechanism of fever accompanying inflammatory processes is primarily referable to the liberation of pyrexin from injured cells, and it is recoverable from the euglobulin fraction of exudates. The absorption of this substance into the circulation offers a reasonable explanation for the development of fever.—A. Eden.

See also absts. **1620**, **1622** (hormones and cancer), **1621** (tumour metabolism), **1640**, **1739** (bull semen), **1678-1680** (action of proprietary drugs on blood picture and temperature), **1738** (haematology), **1740** (pregnancy diagnosis), **1743** (physiology of grazing cattle), **1748** (artificial insemination in New Zealand), **1753** (atlas of avian anatomy).

POISONS AND POISONING

Shrewsbury, C. L., King, F. G., Barrick, E., Hoeper, J. A., & Doyle, L. P. (1945). **Diagnosis of poisoning of beef calves by lead paint.**—*J. Anim. Sci.* **4.** 20–23. **1672**

Since 1933 difficulty had been experienced in raising calves from beef cows in a herd where the calves were uniformly normal at birth but showed marked clinical symptoms between four and eight weeks of age. The symptoms were characterized by failure of the calves to suck, refusal of feed, muscular tremors, partial or complete blindness, staggering, convulsions and death. Autopsy showed the calves to be in good condition and although some pathological conditions were observed [details not stated], the most consistent finding was nephrosis or degenerative changes in the kidney. It was thought that the calves were poisoned as a result of chewing a fence painted with lead paint. Analysis of the livers showed that the lead content ranged from 0·0 to 106·8 mg. per kg. liver on a dry basis.

An attempt was made to reproduce the symptoms by administration of lead compounds to five normal calves ranging in age from 19–68 days. Lead carbonate was given to four and lead acetate to one over a period varying from 6–30 days in doses from 0·5–6·0 g. daily. Convulsions developed in four of the five cases and all the animals died. The total amount of Pb (as the element) fed before death occurred was 9–47 g., the average being 21·8 g. Autopsy showed nephrosis in all cases and a tendency towards oedema of the brain and spinal cord in most cases. The livers contained 56–514 mg. Pb per kg. dry basis. As the syndrome produced by the administration of Pb to normal calves was similar to that observed in the calves in the beef herd it was concluded that Pb poisoning was the cause of the disorder.—R. Allcroft.

Wyndham, R. A. (1941). **Experimental demyelination of the central nervous system. 2. Respiratory enzyme systems of the brain in poisoning with cyanide and with azide.**—*Aust. J. exp. Biol. med. Sci.* **19.** 243–248. [For part 1, see *V. B.* **11.** 644]. **1673**

Hurst, E. W. (1942). **Experimental demyelination**

of the central nervous system. 3. Poisoning with potassium cyanide, sodium azide, hydroxylamine, narcotics, carbon monoxide, etc., with some consideration of bilateral necrosis occurring in the basal nuclei.—*Ibid.* 297–312. **1674**

2. W. investigated the possible relation between inseparable damage to brain tissue after poisoning with potassium cyanide and sodium azide and inhibition of intracellular respiratory enzymes. No evidence was obtained that demyelination in the cerebral hemispheres in monkeys is due to permanent inactivation of the respiratory enzymes.

3. H. describes the lesions in the central nervous systems of monkeys after poisoning with the above substances. Some sheep and rabbits were also used but the response to the poisons was much more erratic than in the monkeys.—D. C. Blood (Australia).

—. (1945). **Coal tar pitch as a cause of liver disease.** —*Fed. Vet.* **2.** No. 7. 1. **1675**

On several farms in Nebraska, deaths of pigs occurred after the ingestion of coal-tar pitch in the form of the shards of " clay pigeons " lying on the pastures after trap-shooting. The livers of the pigs showed central lobular necrosis and haemorrhage, and some proliferation of interstitial tissue. Similar lesions were found in three pigs slaughtered several days after they had eaten 13 successive daily doses of about 1 oz. of some of the suspected pitch material from one farm. —E. Cotchin.

Cutkomp, L. K. (1943). **Toxicity of rotenone to animals. A review and comparison of responses shown by various species of insects, fishes, birds, mammals, etc.**—*Soap.* **19.** No. 10. 107, 109, 111, 113, 115 & 123. **1676**

This is a review of 38 papers dealing with the toxicity of rotenone, derris and cubé, given orally, by various injection methods, and by immersion, to insects, fishes, birds, and mammals. Responses were found to be very variable even within closely related animal groups, and differences could not be correlated accurately with the classification of animals. The g. pig is the mammal most easily affected by rotenone, the oral M.L.D., as reported by various workers, being 0·05–0·2 mg. rotenone per g. body weight. Rabbits are the most resistant, with an oral M.L.D. of 3·0 mg. per g. Dogs and white rats are intermediate in susceptibility between rabbits and g. pigs. Four-week old chickens have an oral M.L.D. of 3·077 mg. per g., but at 5 days old the oral M.L.D. is only 0·996 mg. per g. The comparative toxicities by oral administration appear to be similar for derris and cubé.—W. Moore.

Benesch, R., Chance, M. R. A., & Glynn, L. E. (1945). **Inhibition of bone calcification by sulphonamides. [Correspondence].**—*Nature, Lond.* **155.** 203–204. **1677**

When sulphanilamide or sulphapyridine was fed to pregnant rats (720 mg. per kg. per day) there was definite impairment of calcification of the foetal skeleton. The effect was most marked in the skull. Although both drugs inhibit phosphatase, and sulphanilamide inhibits carbonic anhydrase, the mechanism of the inhibition of calcification is not yet certain.—E. Boyland.

See also abst. **1717** (arsenic and antimony poisoning), **1744**, **1745** (prevention of liver damage by arsenicals and carbon tetrachloride), **1748** (" facial eczema "), **1754** (veterinary toxicology).

PHARMACOLOGY, THERAPEUTICS AND DISINFECTION

Sadikovic, A. (1942). Der Einfluss von Causyth, Yatren, Chinosol, und Eiweissinjektion auf den Blutzucker und die Korpertemperatur. **[The influence of " causyth ", " yatren ", chinosol and protein injections on the blood sugar and body temperature].** —*Wien. tierärztl. Mschr.* **29.** 507. [*Inaug. Diss., Vienna*—only abst. given]. **1678**

Causyth produced a rise in blood sugar and a fall in body temperature in rabbits ; chinosol had the reverse effect and protein produced a rise in both body temperature and blood sugar.—A. T. Phillipson.

Stöhr, N. (1942). Blutbild nach Olobintininjektionen bei Pferd und Hund. **[The blood picture after injection of " olobintin " in the horse and dog].**—*Wien. tierärztl. Mschr.* **29.** 508. [*Inaug. Diss., Vienna*—only abst. given]. **1679**

Injections of 40% solution produced fever and a local reaction at the site of injection. This did not occur when 10% solutions were given. Marked leucocytosis was produced which was at a maximum by two days after injection, characterized by an increased proportion of polymorphonuclear neutrophiles, lymphocytes and eosinophiles. Leucocytosis persisted for 4–12 days. Little change occurred in the red cell count. —A. T. Phillipson.

Jesch, D. (1942). Blutbild nach Vaccineurininjektion bei Hund und Pferd. **[The blood picture after the injection of " vaccineurin " (proprietary albumoid) in the horse and dog].**—*Wien. tierärztl. Mschr.* **29.** 507. [*Inaug. Diss., Vienna*—only abst. given] **1680**

The injection of " vaccineurin " was without effect upon the erythrocyte count and the haemoglobin content. The effect upon the leucocyte count was more rapid following intravenous than following intramuscular injection : in the former case the effect was apparent in 4 hours but not after 24 hours while in the latter case the effect was apparent in 10 hours but not after 48 hours. Increases in the white cell count were in the region of 5,000–8,000 per cu. mm. and were due principally to polymorphonuclear neutrophiles. —A. T. Phillipson.

Beyer, K. H., Peters, L., Patch, E. A., & Russo, H. F. (1944). **The renal elimination of sulfamerazine, sulfamethazine, sulfadiazine and sulfathiazole by the dog.**—*J. Pharmacol.* **82.** 239–246. **1681**

The following average renal clearances (corrected for plasma binding) were found : sulphamethazine 7·1 ; sulphamerazine 9·3 ; sulphadiazine 15·8, and sulphathiazole 35·4. The administration of sodium bicarbonate, which increases the urinary pH, increased the clearances of all the compounds by interfering with their reabsorption. The effect was most striking in the case of sulphathiazole. The production of a water diuresis increased the clearance of all the compounds. As the plasma level of the sulphonamide was raised through the ordinary therapeutic range, there was a progressive increase in the tubular reabsorption of the compounds, with the result that the clearance values did not tend to change with the plasma level.—J. M. Robson.

Henkel, H. (1943). Ueber die therapeutische Wirksamkeit der Sulfone und Sulfoxyde. **[The therapeutic efficacy of sulphones and sulphoxides].**—*Z. ImmunForsch.* **104.** 403–421. **1682**

The properties of 35 diphenylsulphone and sulphoxide derivatives are tabulated. The action of sulphanilamide was compared with that of three other drugs (sulphadiazine, tibatin and preparation 1180) in the treatment of a streptococcal infection in mice. Tibatin (diaminodiphenylsulphone galactoside) appeared

to be the most effective but 1180 was only slightly soluble in water and had low toxicity.—E. BOYLAND.

SPINK, W. W., & VIVINO, J. J. (1944). **Sulfonamide-resistant staphylococci : correlation of *in vitro* sulfonamide-resistance with sulfonamide therapy.**—*J. clin. Invest.* **23.** 267–278. **1683**

Fifty-seven strains of coagulase-positive staphylococci, isolated from an equal number of patients, were tested *in vitro* against sodium sulphathiazole in a synthetic medium containing negligible amounts of sulphonamide inhibitor. Thirty-two of the strains were non-resistant, eight were moderately resistant, while 17 strains required a concentration of 100 mg. % or more of sodium sulphathiazole before growth was completely inhibited. The acquisition of sulphonamide resistance by staphylococci is a persistent characteristic of the organism. The evidence indicates that resistant strains are almost always isolated from patients who have had previous sulphonamide therapy. The development of sulphonamide resistance by staphylococci is dependent, at least in part, upon the elaboration of *p*-aminobenzoic acid by the bacterial cells.—J. M. R.

MILLER, W. S., GREEN, C. A., & KITCHEN, H. (1945). **Biphasic action of penicillin and other sulphonamide similarity.**—*Nature, Lond.* **155.** 210–211. **1684**

Low concentrations of penicillin (*i.e.* 0·005–0·01 Oxford units per ml. culture medium) frequently increase the growth of staphylococci incubated in broth at 37°C. This stimulating effect can be seen regularly on incubation at 24°C. for 16 hours. The effect is not altered by the addition of *p*-aminobenzoic acid or horse serum to the broth. It is suggested that penicillin and sulphonamides have a biphasic action, stimulating at low concentrations and inhibiting growth at higher concentrations. The similarities in action of penicillin and sulphonamides are discussed including the reversibility of action, the variation of effect on different bacterial strains and the fact that bacteria are able to develop resistance to both types of drug.—E. BOYLAND.

MACGREGOR, A. B., & LONG, D. A. (1945). **Action of penicillin on the rate of fall in numbers of bacteria *in vivo*. [Correspondence].**—*Nature, Lond.* **155.** 201–202. **1685**

Bacterial counts in saliva were taken while pastilles containing 500 units of penicillin were placed in the mouth every half hour, penicillinase being added to the saliva samples before they were plated out. There was a rapid fall in the bacterial count (from 40–50 millions down to 10 millions per ml.) during the first 15 minutes, followed by a slow reduction over the next 90 minutes. The rapid effect suggests that penicillin has a bactericidal action.—E. BOYLAND.

*VONKENNEL, J., KIMMIG, J., & LEMBKE, A. (1943). Die Mycoine, eine neue Gruppe therapeutisch wirksamer Substanzen an Pilzen. **[" Mycoins ", the antibacterial substances from moulds].**—*Klin. Wschr.* p. 321. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **144.** 373–374]. **1686**

The authors showed in 1933 that many organisms including aspergilli, fusoria, microsporia, epidermophytes and actinomycetes produce growth inhibitors. They recommend the name " mycoins " for these active substances. In therapeutic experiments remarkable results have been obtained in treatment of infected ulcers with mycoins.—E. BOYLAND.

FOX, S. W., FLING, M., & BOLLENBACK, G. N. (1944). **Inhibition of bacterial growth by *d*-leucine.**—*J. biol. Chem.* **155.** 465–468. **1687**

Lactobacillus arabinosus requires *l*-leucine for growth in liquid media. Growth was inhibited by *d*-leucine, which probably interferes with the utilization of the natural isomer. Gramicidin and tyrocidine contain *d*-amino acids and the antibacterial action of these substances may be partly due to the *d*-amino acids contained in their molecules. Gramicidin is, however, a much more potent inhibitor than is *d*-leucine.—E. B.

FAULKNER, G. H. (1944). **The antibacterial action of some diphenyl derivatives.**—*Biochem. J.* **38.** 370–372. **1688**

A number of compounds chemically related to diethylstilboestrol were tested for antibacterial action against seven Gram-positive and eight Gram-negative strains grown in broth. The most effective compounds against the Gram-positive organisms were all very similar to the oestrogenic substances—thus 4-hydroxy-α, β-diethyl stilbene was more active than diethylstilboestrol and inhibited *Corynebacterium diphtheriae* when present as one part in 600,000, *Streptococcus pyogenes* at 1 : 400,000 and *Staphylococcus aureus* at 1 : 250,000. The most active inhibitor of the intestinal Gram-negative bacilli was *o*-benzylphenol which was bacteriostatic in concentrations of one part in 5,000–10,000. Most of the active compounds contained hydroxy groups and were thus phenolic.—E. BOYLAND.

PETERSON, E. H., & GRAHAM, R. (1944). **Studies on bovine mastitis. I. A note on clavacin therapy in bovine mastitis.**—*Amer. J. vet. Res.* **5.** 316–317. **1689**

Nineteen quarters of five cows were injected with varying volumes and dilutions of both crude and refined clavacin, a derivative of *Aspergillus clavatus*, and identical with patulin, a derivative of *Penicillium patulum*. The injections caused acute active inflammation of the quarter in most cases, and fibrosis in all cases. They had no effect on the number of streptococci eliminated from infected quarters.

The authors conclude that clavacin is unsuitable for the treatment of mastitis.—R. M. LOOSMORE.

SEELEMANN. (1943). Die chemotherapeutische Wirkung von Eubasinum, Globucid, Tibatin und Pyrimal bei verschiedenen Streptokokkeninfektionen im Tierexperiment. **[The action of eubasinum (sulphapyridine), globucid, " tibatin ", and " pyrimal " in experimental streptococcal infections].**—*Dtsch. tierärztl. Wschr.* **51.** 41–45. **1690**

The value of the drugs was tested in mice infected with different organisms. Doses of the compounds were given twice daily for three days. The four preparations were not equally effective against different streptococci. In infections with *Streptococcus pyogenes animalis* (group C) better results were obtained with tibatin and pyrimal than with globucid and eubasinum. Pyrimal gave the best results in *Str. equi* infections. With group A streptococci, globucid was most effective, closely followed by eubasinum. In group B streptococcal infections (typical *Str. agalactiae*), tibatin was more active than globucid or eubasinum : no experiments were performed with pyrimal. The four preparations were equally effective against pneumococci (type 22).

—J. M. ROBSON.

SEELEMANN. (1943). Ueber die Wirkung organischer Goldverbindungen und einiger Sulfonamide auf akute experimentelle Streptokokkeninfektionen der serologischen Gruppe C. (Strept. equi und pyog. animalis). **[Treatment of acute experimental type C streptococcal infections with gold preparations and sulphonamides].**—*Z. InfektKr. Haustiere.* **60.** 65–85. **1691**

Mice infected with streptococci were treated with sulphonamides and gold protein compounds. A sodium salt of gold keratin (neosolganol) was more effective

than a sulphonamide (pyrimal) or a diaminodiphenylsulphone galactoside in treatment of *Streptococcus equi* and *Str. pyogenes* infections. It is claimed that gold compounds give a more complete cure than sulphonamides. Single doses of 3–4 g. of the gold derivatives have been injected intravenously into horses without producing ill-effects. None of the compounds were effective in treatment of brucella infections in mice and g. pigs.—E. BOYLAND.

BELLOCQ, P., & LOUF, R. (1943). Sérothérapie polyvalente antipyogène et sulfonamidothérapie cliniques. **[Polyvalent antipyaemic serotherapy and treatment with sulphonamides]**.—*Bull. Acad. vét. Fr.* **16.** 102–110. **1692**

Daily intravenous injections into horses of polyvalent serum (60–100 ml.) for four days gave good results in treatment of lymphangitis, abscesses and lacerations. A horse with a large thigh wound was successfully treated with serum and small doses (3 g. given intravenously) of sulphapyridine. Excellent results have been obtained in the treatment of over a hundred horses with minor wounds by local application of various sulphonamides. For intravenous use in small doses sulphapyridine appears to be superior to soluseptasine.—E. B.

LINK, T. (1943). Ueber die Chemoresistenz von Staphylokokken gegenüber Sulfonamiden. **[Sulphonamide resistance in staphylococci]**.—*Z. Immun-Forsch.* **104.** 441–462. **1693**

Resistant strains of staphylococci were obtained by repeated subculture in media containing increasing concentrations of sulphathiazole. Normal and resistant strains grow at the same rate in ordinary media and contain the same amounts of sulphonamide inhibitors. The addition of albucid, sulphanilic acid or low concentrations of sulphathiazole stimulates growth for the resistant strains and albucid is even able to neutralize the inhibitory action of sulphathiazole on the resistant strains. Some evidence is presented that the resistant strains are able to convert sulphonamides into *p*-aminobenzoic acid. Thus fastness to sulphonamides may depend upon the acquirement of enzymes capable of converting the bacteriostatic agent into the essential metabolite, *p*-aminobenzoic acid.—E. BOYLAND.

*GREGERSEN, K. (1942). Et Tilfaelde af Saedstrengsbotryomykose behandlet med Yatren Vaccine. **[A case of botryomycosis treated with yatren vaccine]**. —*Medlemsbl. danske Dyrlaegeforen.* p. 706. [Abst. from abst. in *Skand. VetTidskr.* **33.** 485 and 506–507]. **1694**

A foal developing chronic infection of the right spermatic cord stump after castration was treated and clinically cured by a single injection into it of 20 ml. of yatren vaccine E 104 (Bayer).—J. E.

BUU-HOÏ, & RATSIMAMANGA, A. R. (1942). Chimiothérapie de la tuberculose expérimentale avec du dihydrochaulmoograte d'éthyle associé aux dérivés cinnamiques. **[Chemotherapy of TB. by ethyl dihydrochaulmoograte associated with cinnamic acid derivatives]**.—*C. R. Soc. Biol. Paris.* **136.** 772–774. **1695**

Studies on the course of TB. in g. pigs injected twice weekly with 0·5 ml. of a solution of a cinnamic acid derivative of dihydrochaulmoogric acid in ethyl dihydrochaulmoograte showed that the drug had the effect of prolonging the survival period as well as of rendering lesions more discrete and affected organs less hypertrophied. The importance of the saturation of g. pigs with ascorbic acid in experiments on TB. chemotherapy is emphasized.—A. EDEN.

HORTON-SMITH, C., & TAYLOR, E. L. (1945). **Sulphamezathine in the drinking-water as a treatment for caecal coccidiosis in chickens.**—*Vet. Rec.* **57.** 35–36. **1696**

Further experiments have been carried out under more natural conditions than those already reported [see *V. B.* **13.** 304]. Three tests were made on chickens in two groups each of 40–50 birds, both groups being infected by spraying sporulated oocysts on the litter; subsequently one of the groups received a saturated solution of sulphamezathine instead of drinking water. Mortality in the treated group was 50–73% lower than in the untreated control group. In seven further experiments, involving 236 chicks, it was found that heavily infected birds which had received sulphamezathine treatment showed a high degree of immunity to a further massive infection.—M. L. BINGHAM.

EAGLE, H., & MUSSELMAN, A. D. (1944). **The spirocheticidal action of penicillin in vitro and its temperature coefficient.**—*J. exp. Med.* **80.** 493–505. **1697**

Penicillin was actively spirochaeticidal against the non-pathogenic strains of *Treponema pallidum* which can be cultivated *in vitro*. Cultures containing up to 100,000 organisms per ml. were sterilized by the addition of one unit of penicillin to 100 ml. media (*i.e.* one part by weight in 160,000,000). Spirochaetes which have been treated remain mobile 8–24 hours after they have been rendered non-viable. The immobilization was slow even in concentrations 10,000 times the minimal effective concentration. The rate of killing was greatly increased by increasing the temperature and it is suggested that, if the results are applicable to pathogenic organisms *in vivo*, the combined use of fever and penicillin may be more effective than either alone in the treatment of syphilis.—E. BOYLAND.

MUDROW, L., & BOCK, M. (1943). Der Antagonismus von Sulfonamiden und Para-Aminobenzoesäure bei experimentellen Spirochäten-, Spirillen- und Virusinfektionen. **[Antagonism of sulphonamides and *p*-aminobenzoic acid in experimental spirochaete, spirillum, and virus infections]**.—*Z. ImmunForsch.* **104.** 463–473. **1698**

Sulphapyridine had a therapeutic action on mice infected with spirochaetes of recurrent fever (*S. duttoni* and *S. usbekistanica*) but this action was neutralized by dosing the mice with *p*-aminobenzoic acid and sulphapyridine. Similarly the therapeutic action of sulphadiazine on a spirillum infection, of sulphapyridine on lymphogranuloma inguinale, and of sulphadiazine on broncho-pneumonia in mice are all neutralized by administration of *p*-aminobenzoic acid. The behaviour of these virus infections indicates that they are similar to some bacteria n requiring *p*-aminobenzoic acid for growth.—E. BOYLAND.

PARKER, R. F., & DIEFENDORF, H. W. (1944). **Effect of penicillin on certain viruses.**—*Proc. Soc. exp. Biol., N.Y.* **57.** 351–354. **1699**

Intact chick embryos were infected with meningopneumonitis virus or psittacosis virus and treated with penicillin. The treatment either delayed, or when administered in very large doses, prevented the death of the embryos, but it had no effect on embryos infected with equine encephalomyelitis virus. B.H. vaccinia, C.U.II vaccinia, St. Louis encephalitis, and equine encephalomyelitis were cultivated in chick embryo medium with and without penicillin. In these cases penicillin had no effect.—E. BOYLAND.

KRAMER, S. D., GEER, H. A., & SZOBEL, D. A. (1944). **The chemoprophylactic and therapeutic action of a wide variety of chemical compounds on two neurotropic virus infections in mice.**—*J. Immunol.* **49.** 273–314. **1700**

The prophylactic and therapeutic value of 190

compounds in poliomyelitis and St. Louis encephalitis infections in White Swiss mice was determined. No compound of any significant value was found. There is a review of the literature on the treatment of experimental virus infections.—J. M. ROBSON.

MUNRO, J. A. (1944). **Farm stock insecticides.**—*J. econ. Ent.* **37.** 350–351. **1701**

In North Dakota the predominant pests of stock are *Haematopinus eurysternus* of cattle and *Melophagus ovinus* of sheep. The dipping of cattle is not a common practice, the usual procedure being to dust the animals with a proprietary mixture. In the absence of derris and pyrethrum dusts, a mixture of 1% nicotine in 99% dusting sulphur gave very promising results. This mixture also gave good control of *M. ovinus* on sheep when the weather was too cold for dipping.—W. MOORE.

WOLFENBARGER, D. O., & HOFFMANN, E. (1944). **Uses of DDT on the poultry farm.**—*Poult. Sci.* **23.** 545–546. **1702**

Dusting poultry with a dust containing 4% D.D.T. controls the body louse *Eomenacanthus stramineus* and the shaft louse *Menopon gallinae.*

Spraying poultry houses with a solution of 2% D.D.T. in kerosene reduces the number of flies very considerably, and the effect remains for at least six weeks.

Spraying poultry manure with solutions of D.D.T. reduces the population of fly larvae in the manure by 90%.—W. MOORE.

SCOBBIE, E. B. S. (1945). **Substances used in treatment of pediculosis capitis. Their relative value.**—*Brit. med. J.* March 24th. 409–412. **1703**

The most efficient substances for controlling head lice were found to be 2% D.D.T. emulsion and 50% Lethane 384 Special in white mineral oil.

One application of the D.D.T. emulsion gave complete control, but with the Lethane solution, two applications with a week's interval were required.

—W. MOORE.

LINDQUIST, A. W., MADDEN, A. H., & WATTS, C. N. (1944). **The use of repellents against fleas.**—*J. econ. Ent.* **37.** 485–486. **1704**

A large number of substances was tried as repellents against human fleas by exposing an arm treated with the substance under test to fleas in a small cage. The time between application of treatment and first bite was recorded. No repellent was found that would prevent fleas from jumping on to the arm, but any repellent substance, while it remained effective, caused them to leave immediately.

The longest period of protection was obtained with a mixture containing 1% of pyrethrins and 2% N-isobutylundecylenamide in mineral oil. Dimethyl phthalate, Rutgers 612 (2-ethyl-1,3-hexanediol) and Indalone (n-butyl mesityl oxide oxalate) also gave good protection. Clothing treated with any of these repellents gave protection for several days.—W. MOORE.

*STAACK, W., & HAUSAM, W. (1942). Neue Wege der Dasselfliegenbekämpfung. **[Control of ox warbles].**—*Collegium.* **8.** 273–287. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 136]. **1705**

S. treated two young cattle carrying heavy infestations of *Hypoderma bovis* and *H. lineatum* with 5–6 washings of 3% "Derrilavol", dressing one side of the body only. Dressings were carried out in February, and when applied at 14-day intervals killed first-stage larvae already under the skin. Larvae having a harder chitinous cuticle required a higher concentration of the wash to kill them. It was therefore recommended that dressing should start early in the year and should take place at 8-day intervals. The treatment can be applied when the cattle are housed before being turned out to grass. H. investigated the reaction of the treated and untreated halves of the hides to the process of tanning, and found that "more valuable leather" was produced from the treated half of the hide.

[The interval between dressings recommended in this article is shorter than that employed in this country as laid down in the Warble Fly (Dressing of Cattle) Order 1936, and it is also recommended that dressing should begin earlier in the year than is required by the Order. Derris dressings, used in the strength recommended in the Order, will kill the larvae of *Hypoderma* in all its stages of development under the skin, *i.e.* first-, second-, or third-stage larvae. Although the earliest first-stage larvae appear under the skin in February, a period of about one month is passed under the skin, two moults taking place, before the larvae are ready to leave the host and pupate. In this country, therefore, it is the practice to begin the dressing of cattle at about the third week in March, *i.e.* just before the earliest maturing larvae are ready to leave the host, and to dress cattle at about monthly intervals (27–32 days according to the Order). This technique is quite adequate for the control of warble flies, and the shorter interval recommended by STAACK & HAUSAM appears to be rendered necessary by the use of a dilute form of the derris wash which kills the first-stage larvae but not those in the second or third stage.]—T. E. GIBSON.

HOWELL, D. E., & FENTON, F. A. (1944). **The repellency of a pyrethrum-thiocyanate oil spray to flies attacking cattle.**—*J. econ. Ent.* **37.** 677–680. **1706**

A spray containing 2% pyrethrum concentrate, 3% Lethane 384, and 1% Lethane 384 Special, in oil, applied to cows at rates of 0·5 ml., 1 ml. and 2 ml. per 3·23 sq. ft. of body surface was repellent to *Lyperosia irritans* for a period up to 10·5 hours after spraying. Similar application rates were less repellent to *Stomoxys calcitrans* both as to amount and duration; little repellency against this species was observed 4–5 hours after spraying. Infestation with *L. irritans* was greatest in the morning and with *S. calcitrans* in the evening.

—W. MOORE.

SMITH, C. N., & GOUCK, H. K. (1944). **Sprays for the control of ticks about houses or camps.**—*J. econ. Ent.* **37.** 85–87. **1707**

The spraying of vegetation with insecticides resulted in reducing the tick population for about a week only, after which infestation was quickly re-established by ticks emerging from hibernation, hatching or moulting from previous stages, or migrating from adjacent untreated areas. Of the insecticides tried the most successful was one containing 2·6 ml. purified pyrethrum extract (20% pyrethrum), 1 ml. iso-butyl-undecylenamide and ½ oz. soap in 1 gal. water. Sprays containing sodium fluoride and dinitro-ortho-cyclohexyl phenol were also efficient acaricides but damaged the foliage. Nicotine sulphate sprays paralysed the ticks for a short time, but many recovered after 2–3 days.—W. MOORE.

I. MELLANBY, K. (1945). **Scabies prophylaxis using "tetmosol" soap.**—*Brit. med. J.* Jan. 13th. 38–39. **1709**

II. BARTLEY, W., UNSWORTH, K., & GORDON, R. M. (1945). **The rise in incidence of scabies in a closed community using ordinary soap, and its subsequent fall on the substitution of 5% Tetmosol soap.**—*Ibid.* March 10th. 332–333. **1710**

I. A group of 705 patients, of whom 13·2% were infested with scabies, used 10% "tetmosol" soap for a period of 11 weeks, while a group of 1,213 patients

with a scabies incidence of 1·5% used for a similar period an unmedicated soap. At the end of the period the incidence had fallen to 1·3% in the "tetmosol"-treated group, while in the group using unmedicated soap 24 new cases occurred, increasing the incidence to 3·5%.

II. In a community of 400 persons, the incidence of scabies increased from 4% to 9·2% during a period of 18 weeks in which ordinary soap was used for washing. During the succeeding 13 weeks soap containing 5% "tetmosol" was substituted for ordinary soap, and the incidence had fallen to 0·5% by the end of that period. No cases of dermatitis were recorded among the 400 persons using "tetmosol" soap for 13 weeks.

It is concluded that 5% "tetmosol" soap acts as a prophylactic and curative agent against scabies and is an effective means of controlling the disease in an infested community.—W. Moore.

Istin, M., Godal, J., & Miqueu, P. (1942). Une application des produits mouillants au traitement de la gale. **[Use of wetting agents in the treatment of human scabies]**.—*Arch. Inst. Pasteur Tunis.* **31.** 61–70. **1711**

Owing to the war, supplies of recently developed acaricides were not obtainable in North Africa and older forms of treatment had to be used. The chief acaricide available was potassium polysulphide, and in order to increase the efficiency of this substance trials were made with procurable wetting agents. Of the substances tried ammonium sulpho-ricinate was found the most suitable, and a dressing consisting of 150 g. potassium polysulphide, 8 g. ammonium sulpho-ricinate, and 2 litres distilled water gave good control of scabies. Usually four applications were required for complete recovery.—W. Moore.

Taylor, E. L. (1945). **Acaricidal property of a new insecticide, hexachlorobenzene. [Correspondence]**.—*Nature, Lond.* **155.** 393–394. **1712**

A 1% solution of hexachlorobenzene (gammexane) in liquid paraffin was much more active in controlling notoëdric mange in rats than were benzyl benzoate, "tetmosol", or D.D.T. It also had no apparent danger for the animals, while 2 % D.D.T. led to the death of some of the animals after the development of marked hyperaesthesia and frequent clonic muscular spasms. Hexachlorobenzene may ultimately prove of great value in the treatment of both psoroptic and sarcoptic mange. —W. Moore.

Gordon, R. M., & Unsworth, K. (1944). **The prophylactic effect of soaps impregnated respectively with tetraethylthiuram monosulphide and with benzyl benzoate when used once daily to wash rats exposed to infection with scabies due to** *Notoëdres*.—*Ann. trop. Med. Parasit.* **38.** 207–212. **1713**

5% tetraethylthiuram monosulphide in soap is the lowest concentration which is likely to confer complete protection from scabies when the impregnated soap is used only once daily. 10% benzyl benzoate soap provided no protection against *Notoëdres*.—W. Moore.

*Thiem, W. (1942). Die Wirkung von Arsinsäure und Allegan auf die verschiedenen Arten der Pferdestrongyliden. **[Action of arsonic acid and "allegan" on horse strongyles]**.—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 277]. **1714**

Arsonic acid and "allegan" were tested as anthelmintics for horses in an attempt to find a medicament active against large and small strongylid worms. T. used 13 horses and found that arsonic acid given intravenously was active against all species of strongylid worms and that "allegan" administered *per os* acted particularly against the small strongyles (*Trichonema* spp.). The best results were obtained by using a combination of arsonic acid and "allegan".—T. E. Gibson.

Carr, J. G. (1945). **Action of notatin on the Rous No. 1 sarcoma virus. [Correspondence]**.—*Nature, Lond.* **155.** 202. **1715**

Notatin, which has an antibiotic action by virtue of its ability to produce hydrogen peroxide, destroys the Rous sarcoma virus on incubation *in vitro*. Notatin had no effect on the virus *in vivo* either on injection into fowl tumours or on injection just before inoculation with virus.—E. Boyland.

Wernicoff, N. E., & Goldhaft, T. M. (1944). **The field use of sulfathiazole in some diseases of poultry.** —*Cornell Vet.* **34.** 199–213. **1716**

Sulphathiazole was used in twelve outbreaks of acute coryza, two of chronic coryza, one of infectious bronchitis, one of fowl cholera and one of duck cholera. 70,355 birds were involved in the outbreaks of acute coryza. There was a marked improvement in the condition of infected flocks within 3–4 days of the commencement of treatment. The dose given was ½ lb. of sulphathiazole to 100 lb. of meal. The medicated mash was more acceptable when fed dry than when fed wet. Treatment was continued for 5–8 days The authors considered that the drug provided a means of controlling an outbreak of acute coryza but that as treated and recovered birds remained carriers and the disease tended to recur, they recommended the sale of all recovered birds as soon as possible.

The drug was less effective in the two outbreaks of chronic coryza but in one of them the general flock condition improved 2–3 weeks after commencement of treatment, although affected individuals still had to be removed from time to time.

Except for a spectacular improvement in an outbreak of duck cholera involving 1,200 birds, the drug had no effect on the other conditions. The dose recommended for ducks was ¼ lb. sulphathiazole to every 100 lb. mash.—J. D. Blaxland.

Harris, P. N. (1944). **Protection against lethal doses of pentavalent arsenical and antimonial compounds in rats by** *p*-**aminobenzoic acid, a histological study.** —*J. Pharmacol.* **82.** 254–260. **1717**

p-Aminobenzoic acid decreases the lethal action of tryparsamide and stibosan in rats. In animals so protected there is an appreciable lessening of the extent and severity of the renal damage produced by the arsenical and antimonial compounds.—J. M. Robson.

See also absts. **1560** ("lactic ferments" in therapy), **1562** (treatment of trichomoniasis in cattle), **1609** (warble control), **1676** (toxicity of rotenone), **1677** (of sulphonamides), **1744**, **1745** (prevention of liver damage by arsenicals and carbon tetrachloride).

HYGIENE, PUBLIC HEALTH AND VETERINARY SERVICES

*Jepsen, A., Koch, S. O., & Nielsen, O. (1942). Standardmetoder for laboratoriemaessig Undersøgelse af Maelk. **[Standard methods for the laboratory examination of milk]**.—*Medlemsbl. danske Dyrlaegeforen.* p. 413. [Abst. from abst. in *Skand. VetTidskr.* **33.** 484 and 492–498]. **1718**

The methods described are those recommended by the Danish Ministry of Agriculture and Fisheries. The testing of water is also dealt with.

Instructions on the collection of milk samples are orthodox. Fresh milk at the farm is examined by the reductase and catalase tests, by centrifugation and

microscopical examination of the sediment for dirt and appearance. Babies' milk is further examined for *Bacterium coli*, *Bact. aerogenes*, haemolytic streptococci and brucella agglutinins.

Market milk is divided into seven categories—raw, pasteurized and "Stassanized" [see *V. B.* **2.** 111], babies' milk, skim milk, buttermilk, cream, and cream for export. Raw milk is examined for fat content, specific gravity, the presence of preservatives, by the reductase test and, if the latter is positive, by the catalase test, by centrifugation and microscopical examination of sediment, by Storch's test and for dirt. Heated milk is examined similarly and also for bacterial content. Skim milk is tested for fat content, specific gravity, presence of preservative, reductase test, Storch's test and if pasteurized, for bacterial content. Buttermilk is tested for fat content, specific gravity and by Storch's test.

Cream is tested for fat content, for the presence of adulterants (sesame oil, starch, sugar, tragacanth, gelatin), for homogenization, by Storch's test, by the reductase test and if pasteurized, for bacterial content. Cream for export is examined for fat content, dirt and sterility.

In these tests the bacterial content tests are the same as those used for water, using MacConkey's medium at 37° and 44°C., and citrate medium at 37°C. Two tables illustrate the several possible results whereby the actual and relative density or absence of *Bact. coli* and of *Bact. aerogenes* can be determined.

Practical interpretations to decide course of action after use of these tests are given; also a method for examining milking machines for bacteria.—J. E.

—. (1944). **[U.S.] Army Veterinary Corps in England.**—*N. Amer. Vet.* **25.** 667–670. **1719**

The duties of the U.S. Army Veterinary Corps in England include the examination of all food supplies at base, district, port, depot, and unit installations. These duties reached a peak at the time of the invasion of the continent when some sixty million pounds of supplies were examined in a single month. The Veterinary Division includes three main sections, *viz*, administration, technical and record. The technical work comprises inspection at installations and laboratory sampling and testing. In addition to the actual inspection of foods for soundness, attention is given to sanitary conditions, refrigeration, condition of containers, and other related factors. The Division is also responsible for supervising the loading and transportation of food and for maintaining the cleanliness of personnel handling it.—D. D. Ogilvie.

—. (1943). Nota estatística dos serviços do Laboratório Central de Patologia Veterinária nos anos de 1938 a 1942. **[Statistical data on the work carried out at the Central Veterinary Laboratory, Lisbon, 1938-42].**—*Repos. Lab. Pat. vet., Lisboa.* **5.** 357–376. **1720**

This article begins with a list of the bacterial species isolated in the laboratory, and the number of times each organism was isolated in each of the years 1938–42. The fungous, protozoan and metazoan parasites are dealt with in the same way. This is followed by a table which gives a list of the conditions found in anatomical and histopathological examinations. In this case, interest is added by the fact that the animal source of the material is given, and also the tissue affected. Another table gives the amounts of sera, diagnostic agents, rat "virus" [*Salmonella enteritidis* var. *danysz*], and "lactic ferments" produced.—I. W. B.

See also absts. **1550** (tularaemia), **1552** (*Chromobact. prodigiosum* in milk), **1553**, **1554** (salmonella), **1565** (meat inspection of animals vaccinated against foot and mouth disease, **1567-1577**, **1751**, **1752** (rabies control), **1749** (veterinary service in Ajmer-Merwara, India).

TECHNIQUE AND APPARATUS

Troitskiĭ, V. L., Sinyushina, M. N., & Veger, R. A. (1942). O zamenitele agara dlya plotnykh pitatel'nykh sred. **[A substitute for agar in solid culture media].**—*Zh. Mikrobiol., Moscow.* No. 10. pp. 30–33. **1721**

The authors used a combination of several layers of filter paper soaked in nutrient media and covered with semi-permeable membranes such as cellophane or parchment, on the surface of which bacterial cultures were grown. Good results are claimed.—A. M.

Holmes, L. F., & Wilson, M. E. (1944). **Gentian violet-blood agar plates used in aerobic and anaerobic cultures of wounds.**—*J. Lab. clin. Med.* **29.** 1090–1093. **1722**

The work described here was carried out in order to compare growth of organisms on 5% blood agar and on the same medium containing 1 : 500,000 gentian violet. Material from 266 wounds and burns was plated out in duplicate, and cultures were grown both aerobically and anaerobically. It was found that the gentian violet permitted the isolation of many aerobes and anaerobes which would have been missed on blood agar alone. The results appeared to be due to the inhibition by gentian violet of the rapidly growing staphylococci and aerobic spore-bearers, and to the fact that clostridia showed less tendency to spread on gentian-violet blood agar.—Isobel W. Brocklehurst.

Trout, C. L. (1944). **The cultivation of the lepra bacillus.**—*J. trop. Med.* (*Hyg.*) **47.** 1–2. **1723**

The isolation of two acid-fast bacilli from lepromas is reported. Suspensions of tissue from lesions showing no secondary infection were incubated in physiological saline for two weeks or four months and were then seeded on to media suitable for growth of the tubercle bacillus. A fuller report is promised in due course.

—R. E. Glover.

Mahmoud, A. H. (1944). **Isolation of *Trichomonas foetus* (Riedmuller, 1928) in bacteria-free culture by the use of penicillin.**—*Ann. trop. Med. Parasit.* **38.** 219–222. **1724**

A summary is given of previous investigations. M. records the successful isolation of *T. foetus* in pure culture from two out of three vaginal discharges from infected cows; he used the medium of Kerr [1943—unpublished], with the addition of penicillin at a concentration of 30 units per ml.—A. E. Pierce.

Medalia, L. S., Kahaner, J. R., & Singer, A. J. (1944). **Staining method for thin and thick smears for malaria and other cell containing body fluids.**—*Amer. J. clin. Path.* Tech. Sect. **14.** 68–70. **1725**

Smears are fixed in methyl alcohol, immersed in buffered acid eosin for about 4 sec. and then in buffered alkaline methylene-blue, azure-II or polychrome methylene-blue for about 6 sec. Over-staining with either stain is easily corrected by immersion for a few seconds in the other stain. Malarial parasites and cellular constituents stain clearly with good morphological and colour differentiation. The method is sufficiently good for differential blood counts, though not to the extent of replacing Wright's blood stain.—H. S. McTaggart.

CHAPMAN, G. H. (1944). **The reliability of bromthymol-blue lactose agar and Bacto phenol-red mannitol agar for the isolation of pathogenic staphylococci.**—*J. Bact.* **48.** 555–557. [Author's conclusions copied *verbatim*.] **1726**

Plasma-coagulating staphylococci may be isolated by plating the sample on bromthymol-blue lactose agar and on Bacto phenol-red mannitol agar and by selecting typical or suspicious colonies after incubation for the specified times. By these methods there is little chance that any plasma-coagulating staphylococci may fail to be recovered, and 77 per cent of the transplants prove to be plasma-coagulating staphylococci.

CANTOR, A., & SCHOBERT, W. (1943). **The coagulation and sterilization of culture media.**—*J. Bact.* **46.** 203–204. **1727**

The authors discuss the advantages and disadvantages of the coagulation and sterilization of blood serum and egg media by the use of the autoclave. Comparative trials were made with a modern leak-free autoclave and a very old leaky autoclave. In the former, satisfactory egg-yolk medium was produced with only the usual precautions. In the latter it was found necessary to remove gases from medium before dispensing it into tubes. This was accomplished by boiling under vacuum at room temperature. Satisfactory slants of blood-serum medium were produced by placing in the autoclave a completely closed, empty, wooden box of approximately one-fifth of the capacity of the autoclave. The box served as an insulating platform and as a reservoir of air or steam, thus overcoming the disparity in the rate of cooling of the media and the steam under pressure in the autoclave.—S. J.

BINGHAM, M. L. (1944). **Some clinical diagnostic methods of use in conditions associated with animal parasites.**—*Vet. Rec.* **56.** 313–316. Discussion p. 316. **1728**

The laboratory methods used for the diagnosis of parasitic diseases are described, *viz*, the qualitative and quantitative estimation of helminth eggs in faeces, the estimation of the number of worms present in the abomasum and intestines of cattle and sheep with parasitic gastritis, the examination of faeces for lungworm larvae by the Baermann technique, and faecal culture for the identification of strongylid larvae; the diagnosis of coccidiosis by the examination of sections of material obtained P.M., the culture of oocysts in potassium bichromate solution, and flotation examination of the faeces; the diagnosis of bovine trichomoniasis; the use of stains for the identification of blood parasites; and the examination of skin scrapings for mange mites, with suitable methods of mounting and clearing of specimens. It is pointed out that the faecal egg count is of no value in acute infections caused by immature parasites. In bovine trichomoniasis, it is recommended that fresh material be examined at the farm; the agglutination test is recommended for the detection of the presence of infection in a herd.

In the subsequent discussion and the reply reference was made to the identification of the sheep blowfly larvae and to the differentiation of strongyle eggs.
—T. E. GIBSON.

CRAIGIE, J. (1944). **An alkaline thionin method of staining rickettsiae.**—*Canad. J. Res.* Sect. E. **22.** 89–94. **1729**

The stain consists of a balanced mixture of thionine, methylene-blue, sodium carbonate and sodium hydroxide. The methylene-blue prevents precipitation of the thionine base. The sodium carbonate enhances the staining of rickettsia and suppresses the staining of cells and yolk granules. The formation of thiazine carbonate is checked by the presence of sodium hydroxide. There were indications that the method might be of value for staining the larger viruses and spirochaetes in addition to rickettsia. Directions are given for the preparation and adjusting of the stain to obtain optimum results.—R. GWATKIN.

PARÁ, M. (1944). **The application of a processed glue as a substitute for glass coverslips in histologic technique.**—*J. Lab. clin. Med.* **29.** 1294–1299. [Author's summary copied *verbatim*.] **1730**

A description is given of a process by which commercial carpenter's glue, clarified and hardened, may be used as a substitute for glass coverslips in histologic technique. This glue is applied over a layer of Canada balsam, except for some special stains of frozen sections, which are mounted directly. This substance has been termed "micromounting glue". This method of mounting has its principal application in tissue sections, but it can also be used to preserve stained microbiologic smears. Sections mounted in this manner have shown no alteration after a year. The method may be employed for the mounting of preparations for permanent record.

PORTER, K. R., CLAUDE, A., & FULLAM, E. F. (1945). **A study of tissue culture cells by electron microscopy. Methods and preliminary observations.**—*J. exp. Med.* **81.** 233–246. [Authors' summary copied *verbatim*.] **1731**

By means of a tissue culture technique, cells from chick embryos were procured in a state which proved to be suitable for electron microscopy. The electron micrographs disclosed details of cell structure not revealed by other methods of examination.

ERCOLI, N., & LEWIS, M. N. (1943). **The age factor in the response of bone tissue to alizarin dyes and the mechanism of dye fixation.**—*Anat. Rec.* **87.** 67–76. **1732**

Although the intravenous injection of alizarin red S produced coloration of the bones in both young and adult mice, it was found that three to four times more of the dye was required for the adult than for the growing animal. The difference is attributed to the lower vascularity and lower permeability of adult bone. The anatomical zones in which coloration takes place are described; they are the same in both the growing and adult bone and coincide with the areas of greatest vascularity and metabolic activity. Fixation occurred with the inorganic matter of the bone and it is suggested that it is due to adsorption of the dye itself rather than to interaction with the bone salts and the formation of calcium alizarate.—C. W. OTTAWAY.

KESSEL, A. M. (1944). **Multiple tissue carrier for histologic techniques.**—*J. nat. Cancer Inst.* **4.** 361–362. **1733**

K. gives details of the construction of a device for handling large numbers of pieces of tissue. It consists of a series of trays each divided into compartments of variable size for segregation of tissue pieces, and so constructed as to allow the free circulation of fluids.

There is a tray carrier on which the trays can be assembled in groups, and so transferred from one beaker to the next as a single unit during the process of fixing, dehydrating, cleaning and embedding. A lid is provided which covers the beaker, thus minimizing evaporation, and the central tray carrier can be fixed at varying heights by sliding in a central hole in the lid. In this way, the bottom tray can be raised from the bottom of the beaker to facilitate circulation. The whole is constructed of stainless steel.—JOHN G. CAMPBELL.

TOMLINSON, W. J., & GROCOTT, R. G. (1944). **A simple method of staining malaria protozoa and other parasites in paraffin sections.**—*Amer. J. clin. Path.* **14.** 316–326. **1734**

A simple and reliable staining procedure is presented in which standardized, readily available materials are used; it is applicable to any standard method of embedding tissue in paraffin wax after use of any of the common fixatives. The procedure consists in :– (1) staining for 5 min. in a phloxine + calcium chloride solution; (2) washing in tap water; (3) staining for 45 sec. in toluidine blue solution (modified); (4) rinsing in tap water; (5) placing in acetone for 2 min.; (6) transferring to 0·2% acetic acid solution; (7) placing in acetone for 2 min.; (8) differentiating in orange G-colophony-acetone-alcohol, 1–2 min., and (9) running through two changes of acetone-xylol, three changes of xylol, and mounting in a neutral medium. The toluidine blue exercises a metachromic effect, staining nuclei blue to purple and the cytoplasm a pale rose-red. Human malaria parasites show as pale blue cytoplasmic structures in the erythrocytes. The nuclear chromatin varies from deep purple in older trophozoites to lavender-rose in young trophozoites. The melanin can be removed with ammonium sulphide solution, approximately 5% strength. *Trypanosoma cruzi*, *Leishmania*, and *Entamoeba* also show up well in sections. Details of the preparation of the staining and differentiating solutions are given in the article.—U. F. RICHARDSON.

KOENIG, H., GROAT, R. A., & WINDLE, W. F. (1945). **A physiological approach to perfusion-fixation of tissues with formalin.**—*Stain Tech.* **20.** 13–22. [Authors' abstract copied *verbatim*]. **1735**

A method of perfusion-fixation with formalin is here presented which is based upon well established physiological principles. It represents an attempt to preserve more accurately the structure and relationships of nervous tissue found in the living state. The essential points include the following: (1) Perfusion at an hydrostatic pressure equivalent to the mean arterial pressure of the animal to be fixed to maintain the normal patency of the vascular bed. For the guinea pig, it is approximately 70 mm. Hg; for the cat and monkey, it is approximately 120 mm. Hg. (2) The addition of a colloid to the perfusion fluid which will exert an osmotic pressure equal to the hydrostatic pressure in the capillaries and thus prevent edema. Gum acacia is used in this method. Its concentration depends upon the hydrostatic pressure to be used: for 70 mm. Hg, in the guinea pig it is 2·4%; for 122 mm. Hg, in the cat and the monkey, it is 5·6% gum acacia. (3) The addition of an electrolyte to the perfusion fluid to make it isotonic to the tissue fluid and thus prevent a disturbance in the distribution of water in the animal with resultant tissue distortion. NaCl (0·9%) is used in this method. (4) For further fixation or for preservation of the tissues, they are placed in a solution of 10% formalin which contains 0·9% NaCl to minimize swelling.

*VAJDA, T. (1943). **[The enrichment of parasite eggs with "rubycin", a glycerin substitute].**—*Állatorv. Lapok.* **15.** 88. [Abst. from abst. in *Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 34]. **1736**

"Rubycin", a synthetic glycerin substitute, has been tested as a flotation solution for parasite eggs. The substance is colourless or brownish, viscous, and has a specific gravity of 1·219. It appears to be equally as effective as glycerin as a flotation medium, but an important disadvantage is that the eggs do not stand out as clearly under the microscope as when mounted in glycerin.—T. E. GIBSON.

*BAJCSY, E. (1943). **[Can the degree of liver fluke infestation be estimated by an enrichment test count of eggs in faeces?]**—*Közl. Összehas. élét- es kórtan Köréből.* **31.** 360. [Abst. from abst. in *Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 34]. **1737**

A test comparing the expensive mercuric iodide and potassium iodide solution and the cheaper potassium carbonate solution for the recovery of liver fluke eggs from faeces, showed that with the technique used one egg per three drops of solution corresponded to 22 egg-laying flukes in the liver when mercuric iodide and potassium iodide solution was used and to 26 when potassium carbonate was employed.—T. E. GIBSON.

NAPIER, L. E., & DAS GUPTA, C. R. (1940–41). **Haematological technique, parts I-XIV.**—*Indian med. Gaz.* **75.** 99–103, 165–170, 228–239, 290–292, 480–483 & 754–757; **76.** 42–53, 97–101, 164–170, 229–233, 292–296, 427–429, 674–677 & 742–750. **1738**

The authors have published a series of special articles on haematological technique as followed at the Calcutta School of Tropical Medicine. Each part is summarized separately.

I. This part deals with technique for the collection of blood samples and the precautions necessary for sampling whole blood, serum and plasma. Potassium and ammonium oxalates are recommended as anti-coagulants. Different methods for estimating haemoglobin are described, together with the advantages and disadvantages of each. The authors used the Hellige normal haemometer instrument with the acid haematin method. Values are expressed in g. per 100 ml. blood, with their standard deviations. Their observations are compared with those of workers elsewhere.

II. The enumeration of erythrocytes and leucocytes and a modified dilution fluid for red blood cells are described.

III. In this part the counting of reticulocytes and thrombocytes is described. An easy method has been devised and normal values for different populations in India are given.

IV. The cell volume and the different absolute corpuscular values which were calculated from the figures obtained from red blood cells, haemoglobin and cell-volume are dealt with.

V. The qualitative and quantitative methods of Godfried for estimating the serum and plasma bilirubin in normal and pathologic subjects are described, comparisons being made with the observations of other workers. The method for bilirubin content of plasma by icterus index is also described.

VI. The technique of cleaning slides, cover-slips and polishing the slides for blood films is detailed, also the preparation of Leishman, Wright and Jenner stains and easy methods of staining slides.

VII. White cell differential counts are discussed. The identification of various nucleated and non-nucleated cells and of some rare cells to be found in blood and bone-marrow is shown by means of a diagram. The technique of sternal puncture and the number and proportion of various cells that may be encountered is also given.

VIII. The Arneth and Schilling counts for neutrophiles are dealt with. With the help of a chart the erythrocyte sedimentation rate is discussed in relation to anaemia.

IX. Gastric juice from cases of anaemia was analysed by macroscopic, chemical and enzymic methods.

X. The red-cell fragility test, qualitative and quantitative, is discussed. The procedures employed in investigating haemorrhagic diseases are described, under the headings of (a) coagulation time, (b) bleeding time, (c) quantitative estimation of prothrombin, (d)

capillary resistance, (e) clot retraction, and (f) platelet counts.

XI. Red-cell diameters and Price-Jones curves are dealt with and the type of curve in different forms of anaemia is described.

XII. The procedure followed in investigating hospital cases and in reporting the results of cases is outlined with the help of three charts.

XIII. The different nomenclatures used in blood grouping are given, as well as the technique used in the blood bank of the School.

XIV. The transfusion of different blood elements is described, *viz*, whole blood, citrated blood, plasma, resuspended corpuscles, defibrinated blood, placental blood and cadaver blood. Methods of collection, instruments and necessary precautions for transfusion are detailed.—D. N. Mullick (India).

*Blom, E. (1942). Fortsatte Undersøgelser over Mikroskopi af Tyresperma. **[Microscopic examination of bull sperm].**—*Medlemsbl. danske Dyrlaegeforen.* p. 429. [Abst. from abst. in *Skand. VetTidskr.* **33.** 484 and 498]. **1739**

B. recommends a special chambered slide for examining spermatozoa. The slide contains two chambers, a central one 50μ deep and a ring-shaped one 350μ deep. With this it is said that one can quickly make counts and also observe percentage motility.—J. E.

Plum, N. (1942). Draegtighedsdiagnose ved Blodundersøgelse hos Hoppen. **[Diagnosis of pregnancy by blood testing in mares].**—*Medlemsbl. danske Dyrlaegeforen.* p. 501. [Abst. from abst. in *Skand. VetTidskr.* **33.** 484 and 500]. **1740**

Using the Friedmann rabbit test or the Ascheim-Zondek rat test as modified by Cole and Hart, P. found that the percentage of error rose between 1939 and 1940 from 2·8% to 6% in the case of positive reactors and from 3·8% to 7% in the negative reactors. No explanation for this is forthcoming.—J. E.

See also absts. **1537** (mastitis diagnosis), **1544** (culture of tubercle bacilli), **1555** (pullorum disease diagnosis), **1573** (rabies diagnosis), **1607** (determination of vaccine potency), **1614** (medium for *in vitro* survival of liver fluke), **1647** (blood transfusion in large animals), **1755** (clinical and radiological diagnosis in small animals).

MISCELLANEOUS

—. (1944). **The N.F.U. Year Book for 1944 (Wartime edition).** pp. 140. Items of veterinary interest pp. 29–30. London: National Farmers' Union. [8vo] [5s.] **1741**

The Diseases of Animals' Committee, considering the control of swine fever, decided not to press for a compulsory slaughter policy until the results of the experiments with crystal-violet vaccine were available. The Committee drew the attention of members to the use of nicotine wash as a substitute for derris in the control of warble fly, but following some deaths after its use the Livestock Committee warned members against it. A sub-committee has been set up to consider a long-term policy for the eradication of tuberculosis in dairy herds. The Committee supported a suggestion from the Ministry of Agriculture that a scheme for the control of contagious abortion, supplementary to the scheme for the control of the major diseases of livestock, should be introduced.—T. E. Gibson.

Sergent, Ed. (1944). Les Instituts Pasteur d'outremer pendant la guerre. **[Overseas Pasteur Institutes during the war].**—*Arch. Inst. Pasteur Algér.* **22.** 145–156. **1742**

During the war the Pasteur Institutes overseas were only able to continue to function as a result of the generosity of the American Red Cross. The present article gives a review of the activities of each institute, and the work undertaken. This includes research on trypanosomiasis, rabies, rickettsial disease of swine, spirochaetosis of camels, and the preparation of vaccines and sera for swine fever, rinderpest and bovine piroplasmosis. No details of results are given.—U. F. R.

Johnstone-Wallace, D. B., & Kennedy, K. (1944). **Grazing management practices and their relationship to the behaviour and grazing habits of cattle.** —*J. agric. Sci.* **34.** 190–197. **1743**

This paper presents a more extended account of the grazing behaviour of beef cattle than that given in an earlier article by the senior author [*V. B.* **14.** 110–111]. The grazing habits of three Aberdeen Angus and one Hereford cows were studied over continuous periods of 24 hours. During each 24-hour period the cows spent 7–8 hours only in grazing, whatever the length of the herbage. Only some 5 hours of this time could be counted as actually employed in gathering herbage, the remainder being spent in walking short distances and selecting the area to be grazed. About 60% of the grazing was performed by day, when the average distance travelled was two miles, and 40% by night, when the cows travelled only about half a mile. With a dense sward of 4–5 in. in height, representing about 4,500 lb. green herbage to the acre, each cow was able to consume about 150 lb. of green herbage, or 32 lb. of dry matter, daily. As the amount of green herbage decreased through grazing to 2,200 and 1,100 lb. per acre respectively, the daily intake was correspondingly reduced to 90 lb. (20 lb. dry matter) and 45 lb. (10 lb. dry matter). On a pasture containing about 5,000 lb. green herbage of about 10 in. in height, the average daily intake was only 70 lb. (20 lb. dry matter). The average figures recorded for the 24-hr. period are given as follows: time spent in lying down, 12 hr.; time spent in cudding, 7 hr.; frequency of defaecation, 12; amount of faeces, 46 lb. covering an area of 8 sq. ft.; frequency of urination, 9; frequency of drinking, once only, usually in late afternoon; frequency of suckling calf, 3, each for about 15 min. at 8-hr. intervals. The application of these results to pasture management is discussed.—N. J. Scorgie.

REPORTS

I. Great Britain. (1943). **Royal College of Surgeons of England. Scientific report for the year 1942-1943.** pp. 24. London: The College. [8vo]. **1744**

II. Great Britain. (1944). **Royal College of Surgeons of England. Scientific report for the year 1943-1944.** pp. 23. London: The College. [8vo]. **1745**

I. The first section of the report deals with the museum activities undertaken during the year under review and the steps taken to conserve the specimens not damaged by enemy action and to restore the museum. A list of additions is given.

The second part of the report summarizes the research undertaken during the year. In an investiga-

tion concerned with plasma proteins an experimental study was made of the factors involved in influencing the rate of protein synthesis in the liver; two lines of work have developed from this, the production of casein digests suitable for intravenous or subcutaneous injection with a view to increasing the rate of protein synthesis in the body (this might be of use in the treatment of burns, severe infections and fractures) and the use of digests and pure amino acids in the prevention and treatment of severe liver damage. A study of TOXIC HEPATITIS was commenced and it was found possible to prevent liver damage during the critical period of arsenical treatment for syphilis. The study of nerve injuries and nerve grafts has been commenced. Suture materials were investigated for the Ministry of Health; new methods of testing these were devised and suggested standards for catgut were drawn up.

II. Progress has been made on the production of papain-trypsin digests of casein suitable for intravenous administration. Batches of the digest were tested in order to eliminate as far as possible toxic reactions in patients treated with it. Work has also been carried out on the safest and most effective way to administer these products. Work on the effect of various sulphur-containing amino acids on the incidence and severity of liver damage during the treatment of syphilis has shown that the incidence can be reduced. The administration of casein digests, reinforced with large doses of cystine and smaller doses of methionine, produced effective results. In carbon tetrachloride poisoning, methionine treatment quickly repairs hepatic damage but not renal dysfunction; this is remedied by the replacement of choline in the diet. Studies on nerve regeneration after section and suture have been continued.—T. E. GIBSON.

AUSTRALIA. NEW SOUTH WALES. (1943). **Livestock Disease Report, 1941-42, Division of Animal Industry, Department of Agriculture.** [HENRY, M.] pp. 5. Sydney. [fcp] [Mimeographed]. **1746**

AUSTRALIA. NEW SOUTH WALES. (1943). **Livestock Disease Report, 1942/1943, Division of Animal Industry, Department of Agriculture.** [HENRY, M.] pp. 7. Sydney. [fcp] [Mimeographed]. **1747**

These reports record very briefly the work concerning diagnosis, research, quarantine, disease control, and the Swine Compensation Act, and brief livestock statistics.

I. In 1941–42 the research projects included BOVINE MASTITIS, BRUCELLOSIS, SALMONELLA INFECTION in horses, SWINE ERYSIPELAS, SHEEP MITE (*Psorergates*), and NUTRITIONAL ANAEMIA of sheep. The disease control section has notes on the following :– ANTHRAX, TUBERCULOSIS, BLACKLEG, PLEURO-PNEUMONIA of cattle, lice, sheep ked and cattle tick.

II. In 1942–43 research was carried out on MASTITIS, BOVINE BRUCELLOSIS, SWINE BRUCELLOSIS, SWINE ERYSIPELAS, SWINE POX, SHEEP BLOWFLY, SHEEP MITE, SWINE PNEUMONIA, TOXAEMIC JAUNDICE and NUTRITIONAL ANAEMIA of sheep, and nutritional studies.

Outbreaks of SWINE FEVER, the first since 1928, occurred in Western Australia and New South Wales. Disease control is discussed briefly, with some statistics, under headings given in the 1941–42 report.

—HUGH MCL. GORDON (AUSTRALIA).

NEW ZEALAND. (1944). **Department of Agriculture. Annual Report for 1943-44.** pp. 16. Items of veterinary interest pp. 4–8. Wellington: Govt. Printer. [fcp] [6d.] **1748**

LIVE STOCK DIVISION [BARRY, W. C.]

There was no outbreak of serious diseases in cattle, sheep or pigs.

Details of cattle condemned for scheduled diseases under the Stock Act are given.

Of the non-scheduled diseases, MASTITIS and CONTAGIOUS ABORTION continue as serious diseases for the dairy farmer.

In Otago, seasonal conditions were responsible for losses in ewe flocks from PREGNANCY TOXAEMIA.

The past season was not a favourable one from a production point of view and the maintenance of the liquid milk supply presented a problem of some importance.

The statistics of stock inspected, slaughtered, imported and exported are summarized.

ANIMAL RESEARCH DIVISION [FILMER, J. F.]

The diagnostic section at Wallaceville reported on 7,000 specimens submitted by field officers.

Field investigations designed to study the effect of environment on the incidence of MASTITIS have been continued. Experiments with intra-mammary injections of therapeutic agents have been continued, without any very significant results.

Over 2,000 farmers availed themselves of free vaccination of calves against CONTAGIOUS ABORTION, 35,000 doses being issued. The preliminary results of the first pregnancies of 630 heifers vaccinated as calves in 33 herds have become available. Although numbers are small, the results are very encouraging as vaccination has apparently reduced abortions in two-year-olds from 27% to 5% in herds in which abortions in old cows remained well above the New Zealand average.

BLACKLEG and SCABBY MOUTH vaccines were prepared and issued.

The research work conducted on a variety of problems during the year is reported.

Very few clinical cases of "FACIAL ECZEMA" occurred during the year. It was shown that pasture from affected areas can be dried without destruction of the toxin responsible for liver damage, thus making possible more rapid progress in its chemical identification. Field experiments have indicated that liver changes may commence within four or five days of lambs' commencing to graze affected areas and that photosensitization plays no part in causing liver damage.

It was demonstrated conclusively that photosensitization in Southdown sheep depends on the ingestion of green pasture, and that phylloerythrin is almost certainly the photosensitizing agent.

Investigations have been continued on PARASITISM in young sheep both in the field and under controlled pen conditions.

Nutrition work with dairy cows and pigs was continued at Ruakura. Sheep nutrition was also studied.

Considerable areas of peat lands in New Zealand was shown to be deficient in copper. Cattle grazing on the areas develop "PEAT SCOURS" and lambs develop spinal trouble. Methods of alleviation of the deficiency are being investigated and it has been demonstrated that topdressing with Cu compounds is effective.

Experiments have demonstrated that topdressing with 20 oz. of cobalt sulphate per acre maintained a satisfactory Co concentration in pasture for at least three years.

Sheep breeding experiments have been initiated at Ruakura.

The bull semen-testing service was again made available to farmers. In general, the bull fertility work has produced some evidence of a genetic basis for certain types of sperm abnormality.

In a field trial embracing 11 herds, 973 cows were artificially inseminated. Three proven sires whose daughters averaged approximately 400 lb. butterfat on a maturity basis were used. The bulls were of rather low fertility and 749 cows are believed to have conceived to artificial insemination. In general, the ratio of conceptions to inseminations was about what would have been expected from natural services with the same bulls.

Investigations on heritable antigens in the red cells of cattle have been continued.

A study of the nitrate content of mangolds and its relation to their toxicity for pigs has been initiated.

In milking machine research, studies on rubber have been continued. To facilitate the study of milk ejection, an apparatus has been developed and studies commenced.—M. B. BUDDLE (NEW ZEALAND).

*INDIA. AJMER-MERWARA. (1943). **Annual administration report of the Animal Husbandry Department in Ajmer-Merwara (British Rajputana) for the year 1941-42.** [MAHAJAN, M. R.] **1749**

The Director of Veterinary Services, Sind, was in charge of veterinary work from 1905–41 when an Animal Husbandry Officer was appointed under the Indian Government's scheme for developing animal husbandry in the province. The subordinate staff consisted of three veterinary assistants. Until 1941 there was one disease investigation officer for Sind and Ajmer-Merwara combined. The appointment of a separate officer was under consideration.

The chief diseases under investigation were PLANT POISONING and ABORTION in goats.

There was no outbreak of RINDERPEST in cattle during the year, but seven outbreaks were reported in sheep with 2,036 deaths, as against 10 outbreaks and 1,605 deaths in the previous year, and six outbreaks in goats with 180 deaths, as against seven outbreaks with 412 deaths during the previous year. Parasitic diseases, such as GASTRITIS and LIVER FLUKE INFESTATION, were reported in cattle and buffaloes. SHEEP and GOAT POX were prevalent.

223 bovines and 5,273 sheep and goats were vaccinated against RINDERPEST with goat tissue virus and anti-rinderpest serum.

6,724 patients were treated in the three veterinary dispensaries, as against 6,296 in the previous year.

The cost of the department during the year was Rs. 21,863/– as against Rs. 10,170/– in the previous year.

Since the improvement of livestock is the chief aim of the Government scheme, a survey of the whole province has been made. Provision has been made for the purchase and upkeep of 20 breeding bulls. Castration of scrub bulls, equines etc., was carried out, 1,506 animals being dealt with as against 929 in the previous year.

A provincial laboratory for examining pathological specimens was also set up.

—M. K. SREENIVASAN (INDIA).

KENYA. (1944). **Annual report of the Veterinary Department 1943.** [DAUBNEY, R.] pp. 15. Nairobi: Govt. Printer. [8vo]. **1750**

From work on ANTHRAX vaccines it was concluded that under continued sub-culture on serum-free media, rough avirulent variants lose their power to produce antigen. Notes of interest occur on *Corynebacterium ovis* infection in cattle, CONTAGIOUS ABORTION, and the immunization of cattle to EAST COAST FEVER by the use of ticks exposed to a high temperature, but conclusions are not yet available.

In spite of the marked recession of tsetse fly, a good deal of TRYPANOSOMIASIS occurred in native reserves, about 5,000 cattle being treated, half with "stibophen" and half with a phenanthridinium compound. [The result of treatment is not given.]

RINDERPEST inoculations with goat virus were carried out on a large scale, over 70,000 cattle being treated in the settled areas, and 1,285,264 animals in the native reserves. There is now said to be a continuous belt of immune cattle from Lake Victoria to the coast. BOVINE CONTAGIOUS PLEURO-PNEUMONIA is dealt with by slaughter of infected cattle and vaccination of animals in contact.

It has been shown that AFRICAN SWINE FEVER blood treated by Dorset's method or by the modified phosphate method remains fully virulent after incubation for 14 days at 37°C., or after heating for seven days at 46°C. Work was continued on AFRICAN HORSE-SICKNESS vaccination, and four local strains of the virus are now in process of fixation.

The Animal Husbandry section gives notes on the pig finishing station, experiments on the pasteurization of native milk and observations on native dairy cattle. A brief account is also given on the progress of work on leather chemistry, from which it has been found that sodium sulphide is a better dehairing agent than lime.

Statistics on the purchase of cattle by the livestock control authorities, and for Leibig's factory, are also given.—U. F. RICHARDSON.

NYASALAND PROTECTORATE. **Annual report of the Veterinary Department for the year ended 31st December, 1943.** [DE MEZA, J.] pp. 8. Zomba: Govt. Printer. [8vo]. **1751**

With the veterinary staff still under strength, the activities of the department were largely restricted to maintenance work and the supervision of the supply of animal food products for military needs.

In the Northern province TRYPANOSOMIASIS was prevalent in some areas, further advances of tsetse fly being recorded. EAST COAST FEVER caused considerable anxiety in other areas. In the Southern province the disease position was satisfactory, though outbreaks of trypanosomiasis occurred. RABIES gave much anxiety in the Zomba and Lilongwe areas.

Tick and tsetse fly surveys were continued, and the treatment of trypanosomiasis with tartar emetic, phenanthridinium compound and "stibophen" was undertaken. [No detailed information as to results is given.] RINDERPEST VACCINATION with Kabete goat virus was carried out along the Nyasaland-Tanganyika border, and the shooting of game to create a game-free zone was continued.

Supervision of hide marketing and ghee preparation was maintained, and preliminary experiments carried out on the tanning of hides and skins with locally obtained reagents resulted in the production of "fairly good quality" leather.—U. F. RICHARDSON.

SERGENT, ED. (1944). Rapport sur le fonctionnement de l'Institut Pasteur d'Algérie en 1943. **[Report on the Pasteur Institute, Algiers, for 1943].**—*Arch. Inst. Pasteur Algér.* **22.** 63–99. **1752**

3,122 examinations of veterinary specimens were carried out, and from these it is noted that salmonella infections were very prevalent in pigs, horses, mules and camels, in which last animals serious epizootics occurred. Amongst work done at the institute during 1943 were investigations into the carriage of *Leishmania* by *Phlebotomus roubaudi* and experiments on the value of twice weekly doses of quinacrine [mepacrine] in prevention of malaria. Outbreaks of BOVINE THEILERIASIS occurred in the autumn for the first time. Treatment by intravenous injection of formalin gave promising results. Work was done on the preparation of TYPHUS vaccines from mouse lung. Investigations

into RICKETTSIAL INFECTIONS of pigs were carried out, resulting in the discovery of a severe general infection due to *R. suis*, and a conjunctival infection due to *R. lestoquardi*. Observations were made on the effect of the moult on ticks which have been damaged in the previous stage of development. Large quantities of sera and vaccines prepared for veterinary use are listed, but the use of an immunizing vaccine for bovine theileriasis appears to have been discontinued. Only 2,200 doses of RABIES vaccine for dogs were produced, as against 5,550 doses in 1942, owing to difficulty in getting stray dogs for the preparation of the vaccine. No deaths from rabies have occurred in vaccinated dogs for the last four years.—U. F. RICHARDSON.

See also abstr. **1568**, **1720** (statistics of Central Laboratory for Veterinary Pathology, Portugal).

BOOK REVIEWS

CHAMBERLAIN, F. W. [D.V.M., Professor of Anatomy, Michigan State College]. (1943). **Atlas of avian anatomy. Osteology—arthrology—myology.** pp. 213. 95 plates. East Lansing, Michigan: Michigan State College, Agricultural Experiment Station. [Large 4to]. **1753**

This treatise of avian anatomy is intended as much for the zoologist as the veterinarian. It falls into two parts: in the first, a description is given of the bones, ligaments and muscles of the more common species of birds, and in the second are plates illustrating these features.

The greatest value in this book is undoubtedly in these 95 very excellent plates and it is a pity that they are placed so far from the text, as, in anatomy, the full appreciation of description cannot be attained without easy reference to diagrams.

All the diagrams are in black and white. The shaded drawings of the bones are the best. They show excellent definition and clearly indicate the areas of articulation with adjacent bones. A full scale drawing showing the articulation of the clavicle with the scapula and coracoid, and more plates of the tarsal region, could have been added with advantage. The plates of muscles would have shown up to better effect had they made a greater contrast with the outline of the bones.

The atlas measures $13\frac{1}{2} \times 10$ in. and most structures are represented at life size. It is planned to deal with other systems in another atlas. Its value as a reference book is high.—C. W. OTTAWAY.

—. (1945). **Lander's veterinary toxicology.** [Revised by J. A. NICHOLSON (M.A., Ph.D., M.R.C.V.S., Professor of Physiology and Biochemistry, the Veterinary College of Ireland)]. pp. vi + 329. 39 figs. London: Baillière, Tindall & Cox. [3rd Edit.] [8vo] [21s.] **1754**

The appearance of a new edition eighteen years after the publication of the second edition is welcomed. This valuable text book has been revised and expanded by the addition of new material resulting from recent research. Very useful references are listed at the end of the description of each element, substance, or group of poisonous plants. Additions have been made to the work on arsenic, and on sodium compounds. New material concerning thallium, selenium, molybdenum, and fluorine has been inserted. Additions to the text also include descriptions of oil of chenopodium, carbon tetrachloride, and phenothiazine. In the poisonous plants section, revision of the plant families has been made and formulae are given for important alkaloids. The chemical toxicology section has also been expanded. The order of arrangement of the book remains the same.

Although primarily written for veterinary practitioners and students, the complete revision of the text and the addition of new material has yet further enlarged its sphere of usefulness, so that it will also be of help to the toxicologist, and because of the lists of references to the research worker.—E. M. J.

KIRK, H. [M.R.C.V.S., Major, Royal Army Veterinary Corps (T.A.); Member of British Institute of Radiology.] (1945). **Index of diagnosis (clinical and radiological) for the canine and feline surgeon.** pp. viii + 587. 302 figs. London: Baillière, Tindall & Cox. [2nd Edit.] [8vo] [35s.] **1755**

This second edition appears within five years of the original, a testimony to its popularity. It contains much new material especially in connection with feline enteritis, and Stuttgart disease. The differential diagnosis of these and other conditions is facilitated by well arranged tables.

Radiography as an aid to diagnosis, a field in which the author has done pioneer work, is adequately covered. There are many reproductions of X-ray photographs but some of these, and this applies also to many of the line drawings, are not as clear as one would wish. This defect is probably unavoidable under wartime circumstances and the difficulty of reproduction on the type of paper available.

A great mass of information has been compressed into comparatively small space without serious omissions. One would have liked to see the subject of avitaminosis more thoroughly dealt with. On page 68 in dealing with rabies a serious mistake has occurred when it is stated that for diagnosis smears of saliva may be examined for virus. Rabies is not quoted as a cause of dysphagia (pp. 173–178), an important omission, as in countries where rabies occurs the practitioner should always be on his guard to eliminate this cause before proceeding to further examination of dogs showing symptoms of dysphagia or " bone in the throat ". The recommendation on page 115 that where rabies is suspected " animal inoculation should at once be instituted whilst the patient is isolated under observation " is not in accordance with routine practice, as the material commonly used for animal inoculation can only be collected P.M.

In many parts of the world tumours caused by *Spirocerca sanguinolenta* are a common cause of dysphagia and emesis. This cause is not given under either heading.

These and other minor inaccuracies, such as the statement on page 55 that a most important diagnostic aid in cases of piroplasmosis can be obtained from the reddish-brown colour of the urine, are pointed out only in order that they may be corrected in subsequent editions.

The busy practitioner and the senior student will find in this book a reliable and readily available source of inspiration when dealing with the puzzling problems which occur so frequently.

In the preface is promised a companion volume entitled an " Index of Therapeutics ", which should greatly enhance the value of the present volume.

—H. E. B.

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